A FARIIS SOVENA DOMARE

# THE MEDICAL SERVICES

## NOTE

In the writing of this book the author, by the terms of his commission, was given full access to all relevant documents in possession of the Department of National Defence. The facts and figures used by him have been verified from official sources; but he was left free to select and arrange the material. The inferences drawn and the opinions expressed are those of the author himself.

OFFICIAL HISTORY OF THE CANADIAN FORCES IN THE GREAT WAR
1914-19

# THE
# MEDICAL SERVICES

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# PREFACE

The Historical Section of the Canadian General Staff was reorganized in June, 1921. It was charged by Privy Council with the task of collecting and safeguarding all papers concerning the Canadian Forces in the Great War, 1914-1919, and with the reduction of the mass of evidence into a comprehensive history for official publication.

The work has advanced steadily; material has been assembled and classified, but much is still to be obtained. Maps which form the basis of the design have been compiled from documents, and are being gradually completed from the testimony of officers who took part in the operations.

Some of the volumes will contain general history; some will be devoted to particular arms, branches, and services; all will be based on official documents. Maps sufficient for the general reader will be bound with the text; more detailed maps issued separately will provide for more profound study.

The present book is the first of the series. On the recommendation of the Chief of the General Staff and under authority of Order in Council dated October 7, 1921, Sir Andrew Macphail was commissioned to write it; publication was ordered by Privy Council on June 3, 1924.

A subsidiary function of the Historical Section is to give advice and assistance to properly accredited regimental historians who have undertaken the task of preserving in print the exploits of their units overseas. These

more intimate records are not Government publications, although they contribute to the whole by covering limited portions of the ground more closely than the main series. The supply and verification of facts and figures for commemoration and instruction also fall under this head.

Previous to January, 1916, there was, except in the Medical Services, no formal means, other than War Diaries, for preserving Canadian historical documents relating to the War; and the diaries inevitably suffered most when their worth was greatest. It would therefore help to make the History more accurate and complete if readers who can suggest corrections or furnish additional data in the form of orders, messages, diaries or maps will forward them for examination to the Historical Section, Department of National Defence.

A. FORTESCUE DUGUID, *Colonel,*
*Director of Historical Section, General Staff.*

OTTAWA,
*September, 1924.*

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# THE MEDICAL SERVICES

# CHAPTER I

## THE GENERAL THEME

The medical service of an army has no existence in itself. It is a vital part of a living fabric, performing a peculiar function, controlling yet being controlled. Dissevered, it decays and the main body perishes. This law of limited existence applies to an army also. Armies never attain to complete vigour through alliance alone. They must become one and indivisible, animated by a single spirit.

This hard lesson was learned late by Canadians, and a Minister fell before the lesson was taken to heart. The English learned it later still, in the harsh school of war and impending defeat. The school of war closed before the Americans had penetrated wholly into this truth. By a final act of vicarious abnegation the British commander-in-chief made himself subordinate in appearance to an allied general, so that the plan and purpose of his own original strategy might not be imperilled.

A second, and equally fatal error arose out of failure to observe the fundamental contrast between the civil and military function. To provide the forces is a civil act: to train and employ those forces to the proper end is the military business. Failure to observe this law brought the Canadian medical service and the army itself to the verge of disaster; and wrenched the Canadian constitution so severely that it has not yet recovered from the strain.

In the beginning these two functions, the civil and the military, were combined in one ministerial person. It required nearly two years of war to disclose the fault. In the struggle for the mutual freedom of those two principles the Minister of Militia, determined to retain this form of bondage, first attacked that part of the army which is the medical service, and in time became unconsciously the abettor of those who in their anxiety to destroy the Government, himself included, would in utter innocence of the inevitable consequences of their conduct destroy the army too.

There is a military spirit, and there is a civilian spirit. The two are at enmity. All history is merely a record of the conflict, of the attempt to "civilise" what is military; but when this process of civilisation has accomplished its perfect work, then the military spirit, if it has not already perished, comes to the rescue, and civilisation is saved once more in spite of itself. The civilian justly and with reason fears and dislikes the "red coat," before he becomes one himself. To hold the balance between the two, to avoid internal tyranny and escape domination from without, that is the eternal task of men who would be free. But the balance is so nice that the civilian at times will be found striving against the soldier even when both are straining towards a common end.

In the old wars the strife was open. Marlborough and Wellington in purely military operations were thwarted by the civilian spirit operating by methods which earned the dubious designation of political. In this war also the old, and sound, instinct was revived. The Minister of Militia at the outbreak of war was the embodiment of the civilian spirit, which operated too successfully by its concealment under the uniform of the soldier. In time, but not until the lapse of two years, it was discovered that the dual rôle was impossible, and the Minister resigned.

The full force of this contradictory function fell upon the medical service. Most persons are too destitute of knowledge for offering an opinion upon other arms and services, cavalry, guns, infantry, and sappers. They are usually modest enough to refrain. But all men know much about medicine; and some know a great deal about the civil aspect of it, possibly more than those whose profession compels them to know much of military medicine too.

The medical service is of all the most sensitive to criticism, and it suffers most from attack. Surmise, suspicion, and innuendo find an easy lodgement in minds suffused with the natural element of compassion. This ready accessibility has in all wars prompted those whose motives were of the best; it has often proved too strong a temptation for the mingled motives of pride, chagrin, or malice.

History deals with documents in a cold impartial way, and there are abundant documents in the controversy which culminated in 1916, which ended in the removal of the medical director, in his replacement by an inspector-general, in the dismissal of that one, in the temporary reinstatement of the original director, and the final appointment of a new head under which final and complete success was achieved. Had this attempt to segregate the medical service succeeded, the way would then be open for the desperate attempt to envelop the other arms and services within specific lines.

From the moment that the Canadian authorities were compelled by failure to abandon their preconceived amateur notions of particularity and segregation, and conform with the established principles of war, the organization of the forces proceeded with an ease that seemed to be automatic. With the creation of a competent staff in London towards the end of 1916, and a severance of the

civil from the military function, all the elements of a medical service came into being and into unison with the other arms. The Canadians were then equipped with the convalescent camp, the orthopaedic centre, the command depôt, the hospital ship, without which general hospitals are helpless either to complete a cure or dispose of their patients. To supply these essentials is the business of the staff. The medical service merely employs them after they are provided, as the gunner uses the guns that are placed under his hand.

Only the vaguest echoes of the controversy crossed the Channel. The hospitals at the advanced base and on the lines, the field ambulances, the regimental medical officers continued at their quiet work. They were already safe as an integral part of the army which they served; and the army has peculiar methods of protecting itself.

In England the results were more marked. Discipline and loyalty in that part of the Canadian medical service installed in England were impaired; men became rivals who should have been friends; the reticence and silent devotion of the soldier gave place to murmurings and discontent. In Canada the results were deplorable. The public mind was disturbed by speeches and writings that were always incomplete and sometimes false. The worst things were surmised, and the public came to believe that to the inevitable hardship of the soldier was added the cruelty of medical incompetence and neglect. Nothing is more subversive of morale in civil or military life. To that extent aid and comfort was brought to the enemy.

The history of the Canadian medical services cannot be written apart from the history of the Canadian army. It cannot be written at all except as a component and integral part of the history of the medical services in the whole expeditionary force. The present subject, therefore,

can be partial; it must never be impertinent to the general theme. But even this partial field is wide enough for one volume: the British medical history when complete will occupy twelve; the German nine volumes containing 5350 pages. Apart from matters which once were controversial and now in the lapse of time have adjudged themselves, there is enough in the Canadian effort alone to instruct and interest the reader for all time.

Previous to the outbreak of war, the Canadian army medical services consisted of 20 officers, 5 nursing sisters, and 102 other ranks in the regular permanent force. There was in addition a militia organization comprising on paper at least 6 cavalry field ambulances, 15 field ambulances, and 2 clearing hospitals, as well as medical officers detailed for each of the combatant units of the militia. These militia units underwent field training for a period of two weeks each summer; they had lectures, drills, and elementary training in armouries throughout the country during the winter months.

On the outbreak of war in August, 1914, from this small nucleus of regular permanent officers and militia within a month was organized a regimental service for every unit of the Canadian expeditionary force to the number of 30 medical officers, 3 field ambulances, 1 casualty clearing station, 2 stationary, and 2 general hospitals, 1 sanitary section, and 1 advanced depôt of medical stores.

As the Canadian army developed there was subsequently organized for overseas alone, in addition to this initial medical service, 1 cavalry field ambulance, 10 field ambulances, 4 sanitary sections, 3 casualty clearing stations, 4 stationary and 14 general hospitals, 7 special and 8 convalescent hospitals, 2 laboratory units, 3 depôts of medical stores, and 2 hospital ships, as well as regimental medical officers, medical boards, and a training school. This

service required a total personnel overseas of 1,528 officers, 1,901 nursing sisters, and 15,624 other ranks, exclusive of reinforcements. This personnel, in addition to the field medical units, casualty clearing stations, and hospital ships, operated hospital accommodation with a total capacity of 36,609 beds. Medical service was provided for 418,052 troops overseas, and hospital treatment for sick and wounded to the number of 539,690 cases, of which 144,606 were casualties in battle. Seventy medical units were maintained overseas.

In Canada the effort was equally great. Sixty-five medical units were in operation with a capacity of 12,531 beds, to which 221,945 patients were admitted. The total of all units overseas and in Canada was, therefore, 135, with accommodation for 49,140 patients at one time; and 761,635 actually occupied the beds, without taking account of admissions in Siberia and St. Lucia.

The Canadian medical service never failed; it never was embarrassed from any inherent cause, either when it operated in reliance upon itself alone or in those larger operations where it necessarily depended upon the co-operation of the British service. In the praise of fidelity, endurance, and courage that was bestowed so justly and so generously upon the Canadian Corps the medical service had a just and generous share. Sir Douglas Haig, the commander-in-chief, in his despatch of May 19th, 1916, affirmed that all branches of the medical service deserved the highest commendation; the sick rate had been consistently low; there had been no serious epidemic; the wounded had been promptly and efficiently dealt with, and their evacuation was rapidly acomplished. The Canadian medical service was singled out by name for the especial notice of His Majesty as having "displayed marked efficiency and devotion to duty."

In his report of operations for 1918, Lieut.-General Sir A. W. Currie, the Corps commander was able to say, "The devotion of the medical personnel has been, as always, worthy of every praise." (Report O.M.F.C., 1918, p. 184.) To allocate or receive that praise anew is no part of the present task, nor is it possible to follow in detail the operations of every one of the medical units by which this commendation was earned,—that would be to descend from general history to regimental record and personal biography.

War is a simple art, but it is based on knowledge. In the beginning there was in Canada, in the militia and in the permanent force, a soldierly leaven preserved from the olden times. Although neutralized at first, it retained its vigour and leavened the whole mass. In the end there was, and yet remains, incorporate in those who served, a demobilized body of military knowledge. In the medical profession alone are many men, themselves learned and skilled surgeons, prepared by experience in the rough field; enlightened so that they could find their way in a new and difficult situation; educated so that they could take a rational decision; with a judgement so trained that they could at least see a problem in its simplicity. They have obtained an intellectual discipline under a system administered with impartiality and knowledge, where every subordinate was loyal, disinterested, sincere; they have acquired that submission to common action which goes by the name of discipline.

With the present untried political institutions under which the world is for a long time doomed to live, this contest between the civilian and the soldier is bound to increase. In the complete success of one or the other disaster lies. Democracy must choose either the soldier of its own flesh and blood, whom it can inspire and control,

or the unrestrained military spirit which may grow up from within by neglect, or will come from without as an invader. By fostering this ancient body of knowledge which was so hardly won, and so quickly disdained, Canada can best preserve the balance between warlike ardour and civil ardour; between those who, in the formula of Croce, believe that war with its violence, danger, adventure, and triumph will always tempt men; and those who have convinced themselves that war is merely the sign of a bygone age.

It would be a waste of time and a mis-spending of public funds if one engaged upon a work of history were to fill the allotted pages with a mere chronology of events and personal eulogy of those who had part in them. History is something more than record and something less than praise; it demands selection and judgement, judging events as if they were far in the past, and men as if they were already dead; it implies censure as a warning, lest those who read may be misled. History is for the guidance of that posterity which follows and finds itself involved in historical circumstances, which always recur in identical form; for history is the master to which all must go,—history with its pensive and melancholy face.

# CHAPTER II

## PREPARATION FOR WAR

### Origin of the Service—Training—Mobilization—Assembly and Equipment at Valcartier

War is the father of all things,[1] even of medicine, military and civil too. When the Imperial troops retired from Canada a remnant of surgeons remained in the country to continue the military tradition of organization and order, the Hippocratic tradition of sound learning, safe experience, and humane practice. From this root grew, and still grow, the great schools of Canadian medicine.[2] The profession and the service were prepared when war broke out in August, 1914.

The Canadian medical service took form in the North-West campaign of 1885, under the direction of Lieut.-Colonel Darby Bergin, M.D. He was at the time member of Parliament for Cornwall, and officer commanding the Stormont and Glengarry battalion; he had served at Laprairie in 1863 as captain, and in the "Fenian Raid" as major. He held the highest medical appointments in Ontario, and was a practising surgeon since 1847. On April 1, 1885, he was selected by Sir Adolphe Caron, Minister of Militia, to organize the medical service, with the status of surgeon-general. He chose for his deputy Sir Thomas Roddick of Montreal, "one of the most distinguished Canadian surgeons, young, full of vigour, of powerful physique, heeding no fatigue, and a splendid horseman."[3] Dr. Bergin entered upon his duties with



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extreme celerity, and in two weeks created a service which elicited the highest praise. He set forth the principles which should govern such a service, and those principles found their fulfilment in the present war. His mastery of detail was remarkable, and his prevision acute; to these qualities he added discipline, energy, and resource. The medical management of the campaign was a complete success.

Twelve years afterwards a department was created with a director-general at its head. The old Imperial connexion was maintained. The first director, Colonel Hubert Neilson, was trained at Netley; he served in the Fenian Raid of 1870, in the Red River Expedition, in the Russo-Turkish war, and under Sir Garnet Wolsley in the Soudan; he was detailed to the British army for two years; he studied the medical services of the United States and of European countries, and was stationed at many places in Canada. His successor, Sir Joseph Eugène Fiset, had a most distinguished medical, military, and political career. He studied at Aldershot and served in the South African war; he continued in the permanent service, and was director-general from 1903 to 1906, surgeon-general with rank of Major-General in 1914, and deputy minister of militia, under seven ministers from 1906 to 1924, when he was elected to parliament. His successor in turn, Colonel Guy Carleton Jones, had also an intimate acquaintance with Imperial methods. He had his professional training at King's College, his military training at Aldershot, and field service in South Africa.

During these later years Sir Alfred Keogh was in command of the medical services in England, and developed the plan for a unity of method. He suggested that Canada, Australia, and South Africa should create in the Dominions medical services similar to that existing in England, organ-

ized and equipped to the same pattern. The Indian service was made to conform. In England the territorial force was brought into the scheme with the general result that in all countries of the Empire the unity of the profession, military and civil, was preserved for a common purpose. To the territorial force was assigned the duty of organizing general hospitals where medical schools already existed, with a staff available for duty in the emergency of war.[4]

In Canada the military and civil sides of the profession were even more closely joined. Indeed they had never been separated. Men who were destined for the permanent force studied medicine in the same schools with those who were to be civil practitioners, and followed special courses, as those who aspired to any other form of practice. After receiving military appointments they attended general meetings of medical associations, and in papers presented the military aspect of medicine. In 1912 a special camp of the medical service was held in London at the same time as the meeting of the Canadian Medical Association, and the military side of medical work was brought to the notice of a very large and influential number of the medical profession from all parts of Canada.[5]

Schools of military medicine were authorized at Ottawa, Montreal, Toronto, London, St. Johns, Halifax, Winnipeg, and Esquimalt, where details were studied, and the annual camps left free for field operations.

On the civilian side practitioners were equally eager. They identified themselves with local units; they also qualified at Aldershot. The annual meeting of the association of officers of the medical services in February 1914 was presided over by a civilian, Dr. J. T. Fotheringham, and it was addressed by Sir William Leishman, professor of pathology at the Army Medical College, London, upon anti-typhoid inoculation, the subject so closely connected with

his name and work. A plan was organized for the development from civil sources of voluntary aid to the militia medical services. Courses for men and women were established by the St. John's Ambulance Association and the Red Cross Society. A medical reserve was built up from these sources and trained for service in hospitals on the lines of communication and in mobile field units.

As a result of all these activities, Sir John French was free to say in the report of his inspection of the Canadian forces in 1910, that he " inspected several Field Ambulances and hospitals at the various camps, and was much struck by the energy, skill, and efficiency everywhere displayed". Sir Ian Hamilton was similarly impressed by his inspection three years later: " Hospital accommodation in the camps was excellent. In Canada, as elsewhere, the medical corps keeps well ahead of every other branch of the service in the completeness of its preparation for war, a state of affairs due largely to the whole-hearted support it receives from the medical profession in all grades."

American experience was not dissimilar. When the war with Spain began, they were without reserves of men, officers, or material. They were using an obsolete rifle, antiquated artillery, black powder. A clumsy system of administration crumbled at the first pressure; the sanitation of camps showed lack of elementary knowledge and reasonable prudence and an entire want of discipline; but " the medical profession had responded years before the war, and were better prepared to meet the demands than any other branch of the service."[6]

It was due to a medical service organized in time of peace that the American army converted a demoralized, exhausted, and diseased colony into a self-respecting community. Malaria, small-pox, and yellow fever were brought under control by methods acquired from British medicine,

and the tropics were made habitable for white men. The problem of tropical anaemia was solved; and the Panama canal was built on a sanitary foundation by applying the methods discovered by the medical officers. Indeed a medical officer was advanced to the post of commander-in-chief. More pertinent still, although the American army in 1915 had a hundred thousand men stationed from Tientsin to Panama, and from Porto Rico to Alaska, there was not a single death from typhoid fever. The Americans, on account of their freedom from sentimental considerations, were the first to apply complete inoculation to a military establishment.

The training of the medical services in Canada was directed to one end,—war. Their efficiency varied in time and place. In 1912 the condition could not be reported as favourable as in the previous year, and "some units were rated so low as to need reorganization."[7] In this opinion the surgeon-general concurred; but he attributed the defects to the commanding officers, for, as he remarked, seniority does not always mean suitability.[8] There was no lack of efficient officers, for eighty-one were gazetted in that year. In 1914, "the medical units did particularly good work;"[9] "officers and men in plenty were available if only financial conditions would permit."[10] In that year all medical units in eastern Canada were assembled at London and Farnham. Field ambulances were trained in collecting, treating, and evacuating the wounded; six of those formations were engaged for sixteen days under active service conditions, and the medical service of brigades and divisions was worked out in every detail on the march and in bivouac.

The medical service of the Canadian militia was prepared for war by reason of its personnel, its professional and military training. As early as 1911, medical units were

assembled in one camp for sixteen days' training, instead of attending the annual camps of their divisions or districts. Details of equipment and establishment were tested. Exercises were practised, which disclosed the proper function of the regimental medical officer, the field ambulance, the casualty clearing hospital, and the relation of the one to the other. Officers gained some insight into the nature of their duties, mutual acquaintance, and confidence in the administration. This system of training had its origin at the Curragh of Kildare; it was created by Lieut.-Col. C. H. Burtchaell, and was communicated to Canada by Major G. L. Foster, who was attached to the camp for instruction in 1907. A similar system was adapted by Major Munson to the United States medical corps.

For military purposes an armed force is of no value unless it can be mobilized, that is, made to pass from a peace to a war basis. Sir John French in 1910 reporting upon his inspection of the Canadian forces was of the opinion that, "the state of affairs existing at the present time would render a quick mobilization and prompt action altogether impossible, and would effectually paralyse and frustrate any effective preliminary operation of war."[11] It would not be possible, he thought, "to put the militia in the field in a fit condition to undertake active operations until after the lapse of a considerable period;"[12] "the preparation of a suitable mobilization scheme would require the undivided attention for some years at least of two general staff-officers, one administrative staff-officer at each headquarters and one in each Military Division."

In 1913 Major-General Sir W. D. Otter, the Inspector General, "found little or no thought yet given to mobilization requirements nor any evidence of an estimate to meet such demands."[13] In the following year, his suc-

cessor, Major-General W. H. Cotton, noted that "a scheme governing the mobilization of the militia force has been prepared and issued to those concerned." He was not very hopeful of the scheme as a whole, and Sir Colin MacKenzie, chief of the general staff, was still more sceptical.

An armed force cannot be set in motion until it is decided in what direction it will move. It is also important to know the strength of that force itself, and at least the name of the enemy against which it is to operate. In Canada on account of a confusion in political thought much else was unknown. Most persons were agreed that Canada was within the Empire at least in time of peace, entitled to all the rights and privileges of that relation; there was no surety about the obligation that would accrue in time of war. Indeed there were some who put forth the doctrine that the belligerency of Canada was a matter for discussion after war broke out. This problem was too hard for any military staff, and yet within these rather vague limitations a scheme of mobilization had been prepared.

The fact is that there had been compiled a series of mobilization regulations for the militia, loosely referred to in February, 1914, by Major-General Cotton as a "scheme," and in addition a plan for mobilizing a Canadian expeditionary force for general service overseas. It was to the second part Sir Colin MacKenzie referred. The scepticism of the soldier was due to the knowledge that there was not sufficient warlike stores in the country to permit of the complete mobilization of all units, nor sufficient means for the proper maintenance of such stores as actually existed. The regulations were fully discussed and generally approved; it was the possibility of their application at short notice that caused misgivings.

Following the example of the War Office, an advisory committee on questions connected with mobilization was established at Militia Headquarters.[14] It was charged with the task of preparing and revising regulations governing the mobilization of the Canadian militia, and first met on January 7th, 1910. In July, 1911, Colonel W. G. Gwatkin was brought back to Canada as general staff officer, and was made president of the committee. The result was the publication of "Mobilization Regulations (Provisional)" printed in 1912, and known as H.Q. 1257,[15] 1913. The instructions provided for the mobilization of all militia units in Canada;—one infantry division and certain cavalry, fortress, and lines of communication units, from each of the six divisional areas, as well as the three mounted brigades which, with independent units, then existed in the three military districts of the West. The plan contained general directions of procedure on mobilization, and detailed instructions relating to personnel, horses, transport, war outfit, pay, purchasing, and emergency requisitions. It set forth that units which existed as such in time of peace should carry out mobilization at their peace headquarters; it directed that local orders dealing with other cases and supplementing the regulations should be prepared by divisional and district committees.

Quite apart from the mobilization of the Canadian militia, the military staff dealt separately with the measures which should be taken in case "one day the Dominion Government might decide to mobilize for active service overseas a Canadian contingent." The problem was considered in August, 1911, by Colonel Gwatkin who, in forwarding for the remarks of district commanders proposals for a scheme[16] to raise a contingent of 24,352 all ranks, wrote that "in view of what is now going on in Europe the C.G.S. wishes this scheme to be kept secret," and cautioned that

"if its existence were to become known in certain quarters, a natural but erroneous deduction might lead to a great deal of mischief." The scheme was issued on the 3rd of October, 1911; and in December of that year, as a result of recommendations made by divisional and district commanders, further particulars and the names of unit commanders, but without their knowledge, were added. It provided for one infantry division with medical units and one brigade of mounted troops all at British war establishment. Places of assembly were named, usually the most convenient town, and from those towns units, after they had reached a sufficiently advanced state of mobilization, would move to Petawawa, the place of concentration. It set forth the status of the force under the Army Act; it established the rates of pay and allowances, the conditions of enlistment and service, the appointment of officers; it arranged for the provision of horses, vehicles, equipment, and for the supply of reinforcements. To each part of the country was assigned its due proportion; and on the order, "Mobilize Contingent," all ranks would fall into place.

The Army Medical Corps personnel was specified in complete detail.[17] For the headquarters and component units of the contingent 63 medical officers and 951 other ranks were assigned. The number does not appear to have been excessive. The demand for personnel to be detailed from headquarters was especially modest—4 officers, 15 other ranks, including 3 clerks, 1 orderly and 1 dispenser.

This scheme was prepared under the direction of the then Minister of Militia, Sir F. W. Borden. It was issued a few days after his successor, Colonel Sam Hughes, assumed office. But Colonel Hughes was unaware, or had forgotten the existence, of the scheme until by accident it came to his notice in May, 1913, during an inspection in Hamilton. He was astonished to find a detachment ready

for inclusion in a mobilized division of whose existence he remembered nothing; but he was compelled to believe the Chief of the General Staff, who assured the Minister that he had been informed of the scheme shortly after his appointment.

As a result of this unpleasant surprise Colonel Gwatkin, with two other staff officers, was detailed for a revision of the scheme, the Minister having given his sanction on May 16, 1913, that the number of all ranks should be raised to 25,374. By the end of May, 1913, a plan was prepared, showing how a contingent might be raised by making each militia unit responsible for supplying a specified complement. Places of assembly, of mobilization, and depôts were named; lines of communication units were added, and changes were made to conform with more recent conditions. However, this revision was not issued, and for over a year no further action was taken.

When war was imminent, this and all other schemes were abandoned. By direction of the Minister a letter was issued on July 31, 1914, to all officers commanding districts asking them to consider the procedure they would adopt in the event of being called upon to raise troops for service overseas, and warning them that no attention was to be paid to the tables included in the mobilization scheme.[18] Without even awaiting the result of those deliberations orders were issued from the Minister's office to commanders of units to enlist men, and proceed to Valcartier. The men assembled, and the task of mobilization, which experienced soldiers like Sir John French believed to be a long and difficult one, the Minister appeared to achieve as if by a miracle. It is only fair to add that an assemblage of men is not always a military force, nor is a military force mobilized until it is changed from peace to war basis, until its war establishment and its war equip-

ment have both been completed, when even its horses have been shod, its harness and saddlery fitted.

Men considered it providential that in the crisis the Minister of Militia should have been Colonel Sam Hughes. He was of mature age, and had been in the militia since his thirteenth year, a period of fifty years save one. He had "declined the position of Deputy Minister of Militia in 1891, and of Adjutant-General in 1895"; he commanded the 45th Battalion in 1897, and took part in the Queen's Jubilee (medal) of that year; he was President of the Dominion Rifle Association, of the Small Arms Committee, and of the Board of Visitors to the Royal Military College. He had served in the Fenian Raid in 1870; he had "personally offered to raise corps for the Egyptian and Sudanese campaigns, the Afghan Frontier War, and the Transvaal War." He actually served in the South African War, and was mentioned in despatches "several times." Troopers in his command have borne testimony that for courage, resource, and industry he could not be excelled. He was capable of correct decisions and generous emotions; those who knew him only at such times remained his ardent partisans to the end. To continue the record, as supplied by himself for the book in which such matters are contained, he was a member of the Foresters, the Masonic, and Orange Orders; a Methodist, Conservative, and was born in Ontario.[19]

It was with good cause he had unbounded confidence in himself; and that confidence was shared by the people of Canada. His great hour had come. Recruits were trooping to the colours at Valcartier, and the Minister in the enthusiasm of the moment declared that he "could raise forty divisions." He might well say with *Coriolanus* —Alone, I did it.

Valcartier was a sandy plain sixteen miles north-west of Quebec, divided into small farms and in part covered with a low forest growth. The farmers were evacuated, the land was cleared, and the camp laid out at a cost of two hundred thousand dollars. The work was begun on August 8th, and the camp closed on October 9th. A report upon the site had been made by the competent military officer, and when this report was confirmed by a civil sanitary officer from Ontario, operations began. By the first week of September 33,000 men had assembled. They were drawn from more than two hundred militia units and had little cohesion.

The men were without adequate tentage and without great-coats in the autumn frosts and rain; the horses were without coverings. Catarrhal conditions developed. The Jacques Cartier river which flowed through the camp became polluted; swift precautions were taken; there was no epidemic of typhoid; only one case developed before England was reached. This method of concentration bore heavily upon the medical services. The officers were suddenly faced by forty thousand men for whom sanitary arrangements were required if epidemic sickness was to be avoided. Each recruit must be examined in a confused camp rather than in the peaceful leisure of his native town, where the established standards should have been applied.

The medical mobile units were the first to arrive; No. V Field Ambulance from Montreal, in command of Major R. P. Campbell; No. IV from Montreal in command of Major S. H. McKee; a unit from four field ambulances, originating in Winnipeg and further west, under the command of Major F. L. Vaux; a composite unit from Toronto including one field ambulance complete, personnel for one clearing, one general, and one stationary hospital, with the

water detail for a division, all in command of Lieut.-Colonel D. W. McPherson; some details from Halifax and Quebec, and No. IX from Charlottetown. From these formations three field ambulances were authorized, the personnel of each to be drawn from three areas, eastern, central, and western Canada.

The lines of communication units arrived about the same time. No. 1 Clearing Hospital came from Toronto; No. 2 from Halifax. There were in addition two stationary hospitals; and two general hospitals were newly formed. Before reorganization took place all units, with two exceptions, were disbanded and the personnel taken on the general list. By chance and choice new groupings were evolved.

At Valcartier these units performed the functions proper to a camp. The field ambulances were organizing and carrying on what training they could. The general hospitals were collecting medical stores in the immigration sheds at Quebec, running an ambulance train, or caring for the local sick. The stationary hospitals had improvised camp hospitals. About 30 medical officers were employed examining recruits, and 10 doing inoculation and vaccination.

Sanitary authority was divided between local areas. Contracts were difficult to award. An area would be occupied by eight or ten formations out of which one battalion was to be formed. Until this was completed there was no single responsibility for camp sanitation. The assistant directors of medical services, were in succession: Lieut.-Colonels H. R. Duff, J. W. Bridges, and later, Colonel J. T. Fotheringham. The officer in charge of training was Lieut.-Colonel G. L. Foster.

There was some useful training for all arms and services by drill and route marches. But remembrance of

South Africa was strong in the ministerial mind. Rifle ranges three miles long, "the longest in the world," were constructed. Each recruit was expected to aim and discharge his weapon thirty-five times. The Germans had made the discovery that a recruit never hits the object at which he aims, and their troops were taught to fire as they advanced, without aiming, in the hope that they might hit something. But at Valcartier military training in a general sense was negligible. The time was occupied in organizing and re-organizing, issuing clothing and equipment, examining and inoculating recruits, writing new attestation papers, and preparing for reviews.

The medical services were equipped with haversacks and field panniers complete, and all the elements of technical medical equipment. But they lacked ordnance stores, such as sheets and pillow cases, knives, forks, dishes, beds, blankets and palliasses, which were yet in their original packages. They were shipped overseas in this state, and it required months of labour in England to extricate them from the general mass and assign them to the proper units. The material for all arms of the service was hopelessly intermixed in the ships' holds, and the only method of assortment was to spread it on Salisbury Plain, and allow each unit to make its own selection. For months the equipment, personal kit, stores, and parts of vehicles which had become separated from units in the confusion at Quebec or in the unexpected debarkation at Plymouth, were being collected from the unsheltered railway platforms bordering upon the Plain.

The impossible had been attempted. Canada was strong in men alone. Equipment was almost wholly lacking. Contractors appeared upon the scene. Without patterns, without supervision or direction, they poured into Quebec supplies that had no relation to the hard conditions

of war. Men going upon active service were furnished with boots that might do very well for a farmer making an excursion to his barns on a Sunday afternoon, or for his daughter going to church. After twelve parades, these boots were reduced to a sodden mass, and the paper from which the heels were made returned to its primitive pulp. Wagons were assembled that might do very well on the illimitable prairie. They were of all possible types, so that each maker and every town might have a chance to profit by public funds; but there was not a road in Europe wide enough to allow them to turn.

The last days of September were set apart for embarkation. The Admiralty had provided escort in accordance with that design, and gave notice that on the 3rd of October, the cruisers would be withdrawn if their services were not required before that day. Stores were loaded into the ships; the men were marched on board; and when the docks were cleared, and the ships moved down stream, the civilian embarkation officers were ready to believe that their work was done. Mobilization really took place on Salisbury Plain after the men had been tested by cold and wet, and most of their equipment had been cast aside. Field ambulances require a first line transport, general service and ambulance wagons, but none of this was in sight for months to come.

Speed in passing troops overseas to England was the sole principle of mobilization. Canada and the world must not miss the spectacle and advertisement of a new "armada." Men wise in certain walks of life professed the belief that the war would be over by Christmas, although they were not so specific in their prophecy as to what the end would be, and the Minister announced his resolve that in the event of the war lasting until the spring he himself would take the field.

Training and equipment in Canada was exchanged for training and equipment in England, with the result that the Minister declared in an address before the Canadian Club at Port Arthur, January 16, 1915, that in his opinion the troops on Salisbury Plain were not as fit for service as when they left Valcartier. In the first week of the same year, Lord Kitchener, in reply to Lord Curzon in the House of Lords, who asked why the Canadian troops were not being sent to the front, made answer: "they are not sufficiently trained at present." Valcartier was a mistake: Salisbury Plain was the consequence.

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[1] πόλεμος παντων πατηρ. Heraclitus, Fragments, XLIV. Quoted by Von Schjerning.

[2] *Brit. Med. Jour.* Oct. 13th, 1917. Major-General J. T. Fotheringham. B.M.A. Meeting, Montreal, 1897, Sir Wm. Osler. *The War Story of the C.A.M.C.* Adami. 1918, p. 14.

[3] Report Surgeon-General. 1885, p. 74.

[4] *The Great War and the R.A.M.C.* 1919, p. 8. Brereton.

[5] Report of Militia Council 1913, p. 60.

[6] *Military History.* Major-General Leonard Wood, 1921, pp. 138, 205, 221.

[7] Interim Report of Militia Council, 1912, p. 30.

[8] Report of Militia Council, 1913, p. 58.

[9] Ibid. 1914, p. 13.

[10] Ibid. 1914, p. 59.

[11] Report, p. 8.

[12] Report, p. 24.

[13] Report March 31st, 1913, p. 111.

[14] H.Q. 93-1-3 "Establishment of a Mobilization Committee at Militia Headquarters."

[15] H.Q.C. 1257. *Canadian Militia Mobilization Regulations (Provisional), 1913.* 32 pp.

[16] H.Q.C. 1209. "Mobilization for Service Overseas."

[17] Ibid Table C.

[18] Ibid.

[19] *Who's Who,* 1921.

# CHAPTER III

## THE FIRST CONTINGENT

THE ADVENTURE OVERSEAS—SALISBURY PLAIN—TO FRANCE AND YPRES—FESTUBERT, GIVENCHY

Out of the medical forces assembled at Valcartier certain definite units finally emerged, and proceeded overseas. These with their officers commanding were: No. 1 Field Ambulance, Lieut.-Colonel A. E. Ross; No. 2 Field Ambulance, Lieut.-Colonel D. W. McPherson; No. 3 Field Ambulance, Lieut.-Colonel W. L. Watt; No. 1 Casualty Clearing Station, Lieut.-Colonel F. S. L. Ford; No. 1 General Hospital, Lieut.-Colonel Murray MacLaren; No. 2 General Hospital, Lieut.-Colonel J. W. Bridges; No. 1 Stationary Hospital, Lieut.-Colonel Lorne Drum; No. 2 Stationary Hospital, Lieut.-Colonel A. T. Shillington; and No. 1 Sanitary Section, Major R. E. Wodehouse. Colonel G. C. Jones was Assistant Director of Medical Services, with Lieut.-Colonel G. L. Foster as his deputy. As from September 21, 1914, Colonel Jones was promoted Surgeon-General after arrival in England, and was appointed Director of Medical Services; Lieut-Colonel G. L. Foster became Assistant Director, and Major H. A. Chisholm his deputy.

Embarkation began on September 22, and was completed in eleven days. The ships had been withdrawn from their trade routes and were hastily fitted for troops. Units marched on board without any preconcerted plan. As each ship was loaded, it dropped down the stream, with orders to proceed to Gaspé Bay. The convoy was composed of 32



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transports carrying 30,621 Canadian troops and two other units. Of the medical units No. 1 Field Ambulance sailed in the *Megantic,* No. 2 in *Laurentic,* No. 3 in *Tunisian;* No. 1 General Hospital in *Scandinavian,* No. 2 with nursing sisters in *Franconia;* No. 1 Stationary in *Athenia,* No. 2 in *Scotian;* No. 1 Casualty Clearing Station in *Megantic;* the transport and horses were carried in *Cassandra, Montezuma, Monmouth,* and some in the *Manhattan* which did not sail with the convoy.

The ships sailed from Gaspé Bay on October 3, 1914, and arrived at Plymouth on October 14th. The original destination was Southampton. The Minister with laudable self-abnegation averred that the change was effected by Sir Robert Borden who had heard that there were submarines in the Channel, and recommended the Admiralty to exercise unusual care of the Canadian contingent. It is probable, even certain, that Rear-Admiral Rosslyn Wemyss had other sources of information, and quite improbable that the Premier would have interfered in a naval operation so complicated and so unfamiliar to him. It was eleven days before disembarkation was complete. The facilities at Plymouth were much less adequate than those at Southampton, and one ship with 1,200 troops and stores proceeded to Avonmouth.

There are abundant diaries concerning this great adventure over the sea. They are naif and fresh but not very interesting. The writers are astonished at the smoothness of the water. In the medical stores were 20,000 boxes of a secret remedy for sea-sickness, but it was not in great demand. Not all agree as to the excellence of the food. Much is made of the cold baths and exercise that were taken, and of those games, closely resembling horse-play, in which serious officers were compelled to indulge. In some ships, depending upon the intelligence of the senior officer,

the training was methodical and continuous, and his troops landed fresh and strong.

The troops detrained at various stations on the border of Salisbury Plain, and made their way to the areas assigned to them, often in the night and rain, guided by a policeman on a bicycle, the medical units to West Down North, where they found tents ready pitched. This desolate area, fifteen by twenty-five miles in extent, devoid of fences, houses, or people, served admirably for summer manoeuvres, and practice with heavy guns, but it was unsuitable for a winter camp. A thin, poor, clay soil covers the under-lying chalk which is impervious to water. Wherever men marched the soil was trodden into a quagmire. The season was the wettest in sixty years. In December, 6.34 inches of rain fell. In one period of 75 days there were only five days dry. Salisbury Cathedral itself was awash.

An observant and truthful officer who served with the 1st Division continuously except for the usual periods of leave, from the time of Valcartier until the day it crossed the Rhine, affirms that the vicissitudes of that service were accompanied by less misery than he endured on Salisbury Plain. These conditions were accepted without complaint as the essential and inevitable consequences of war. Officers and men made every effort to improve them, and exercised the last ingenuity in making life tolerable. There was something pathetic in this patient acceptance of conditions imposed upon them by a power which they did not understand; but this innocence and ignorance may have left the authorities a little too complacent. In the valleys were houses warm and dry, and the inhabitants of Salisbury alone had accommodation enough, without much inconvenience to themselves, for a division of troops that was lying a few miles off in the open mud.

The billeting of soldiers in England had long been governed by the Annual Mutiny Act, (38 Vict. c. 7 *paras* 63-67) which specified that no officer or soldier shall be billeted in any private house; and in places where they may be billeted the right of assigning billets is withdrawn from military officers and is vested in civil constables and magistrates. This had been the law of England since the year 1688 at least. Remembering the days when the billeting of soldiers upon a private person in time of peace was employed as a delicate means of coercion or revenge, the people of England came to forget the deeper obligation upon a man who owns a house to provide shelter for the soldier who is engaged in defending him. Neither at home nor abroad upon its various modern expeditions was the British Army accustomed to billets. When the first divisions went to France in 1914 ample tentage was carried, and it was only after much deliberation that the troops were allowed to occupy the houses of the country.

This Annual Mutiny Act in 1879 was embodied in the "Army Discipline and Regulation Act," which in turn was replaced by the "Army Act" of 1881. In the year 1909 a section was added increasing the power of billeting in case of emergency to " dwelling houses " and other places specified. Royal Proclamation was made on August 4th, 1914, "for calling out the Army Reserve and embodying the Territorial Force;" and on the same day an Order was signed " authorizing general or field officers to issue billeting requisitions." Accordingly, the "new Field Army," commonly known as "Kitchener's Army," called for on August 6 and 7, was billeted as enlisted.

It was not therefore from lack of thought on the part of the War Office, or from any selfish reason on the part of the people of England that the Canadian troops were assigned to an open camp rather than to the comfort

of private quarters. The War Office had been led to believe that the 1st Canadian division was fully trained and equipped. Had equipment been available either in Canada or in England, and the November weather no worse than usual, the division would have been dispatched to France early in December. It was not the intention to keep them in camp all winter. In any case, Salisbury Plain was selected as being the best camp in England, and British troops in other areas were suffering equal or even greater hardships. Only native hardihood carried the soldiers through that long and desolate winter. As the equipment they brought with them was largely worthless and had to be replaced, they might as well, had the War Office been more fully informed, have continued training in local areas in Canada until the worst of the English winter was past.

After six weeks the discomfort in the increasing cold made tent-life unbearable. Hutments were erected by the men themselves, after a truce had been effected with the labour unions of England. The huts were overcrowded. Influenza, subacute enteritis, and meningitis promptly broke out. The weather and the terrain forbade those military exercises which interest the mind whilst they mould the physique for the business of war. The men had enforced leisure and were freely given leave. Idleness is the mother of lechery, and venereal disease was brought into camp from those excursions into the towns. In all there were 1,249 cases, and the last of them were not out of hospital until early in May.

The career of the medical units in England may be briefly stated. The ambulances remained each with a brigade, and continued technical training. No. 2 General Hospital being the first to arrive opened tents with equipment supplied by an ambulance, as their own stores were

yet at Plymouth. The original intention was that the British service should care for serious cases either at Tidworth or in Salisbury; but the influx of wounded from Ypres filled up those centres, and the Canadians were obliged to provide for their own. The inclement weather compelled them to abandon the tents and take refuge in Bulford Manor and in adjacent houses. In the meantime, by an error, the stores of No. 1 General Hospital came forward, therefore on November 6, Bulford was taken over by No. 1, some of the officers and nearly all of the personnel of No. 2 being retained as reinforcements. With the rising flood of water and the influx of cases Bulford became untenable, and the hospital, less the venereal section, was removed to Netheravon. During the whole period No. 1 General treated 3,993 patients with 69 deaths. When the Division went overseas this unit was left in charge of the sick, and it was May 13 before it entrained at Amesbury for France.

No. 2 General Hospital had a chequered career in England. By an error this unit was for a time deprived of its stores. The establishment was broken up. In due course it was reassembled, and the unit arrived in le Havre on March 14. On the 31st the hospital was ready to receive patients at Le Tréport.

No. 2 Stationary Hospital was the first Canadian formation to arrive in France. The officer commanding understood the procedure by which action was to be secured, and the unit left Salisbury Plain on November 6, by Southampton for le Havre. On November 27, it opened in a hotel at Le Touquet with 300 beds. This was the winter of "trench feet" and the hospital was soon filled. On the same date, however, a detachment of 15 officers and 11 men under Colonel J. W. Bridges proceeded to le Havre, and two days later to Boulogne, to reinforce the overworked British hospitals.

It was the first intention that No. 1 Stationary Hospital should remain in England, and St. Vincent's at Hampstead was assigned to it; but the plan was changed, and on February 2, 1915, this unit proceeded to France. It opened at Wimereux and operated until July, when it was dispatched to Lemnos.

No. 1 Casualty Clearing Station was sent to Taplow under Canadian control, with Lieut.-Colonel F. S. L. Ford in command, where it remained until February 1. It was installed at Cliveden, which was granted as a site by Major W. Astor, and afterwards became the location of No. 15 Canadian General Hospital. A new organization was formed under Lieut.-Colonel A. S. Gorrell, and No. 1 Casualty Clearing Station marched out. It landed in le Havre on February 2, and after a short stay in rest at Gravelle, and again at Boulogne, arrived on March 8, at Aire, about seven miles from the rear of the divisional area, where it remained until January, 1916. Within two days of its arrival, this station was in action, receiving 550 casualties from Neuve-Chapelle.

Certain general statements are appropriate to all equipment; in an account of the medical services only the equipment special to that service need be considered. But as various medical units carry arms and employ horsed and mechanical transport, their equipment only varies in detail from that of all other first line forces. It is, therefore, impossible to segregate wholly the equipment of the medical services for the purpose of comment.

When the First Contingent was mobilized at Valcartier there was not in Canada an adequate supply of all the numerous articles required to complete units to establishment under mobilization store tables. The Canadian issue of service dress, Oliver equipment, boots, bicycles, motor cars, transport wagons, saddlery, and harness, was not of a

suitable pattern or quality, and had to be replaced from British ordnance stores. In the case of the service dress, the Canadian pattern disappeared gradually, as the original issue was not withdrawn, but all replacements in France were made as required. All the other articles were exchanged before the 1st Division proceeded to France. It was after arrival that the light horsed field ambulance wagons were replaced by the heavier British pattern.

The 2nd Division was furnished with Webb equipment and British service regulation boots in England, immediately before proceeding to France in September, 1915. Harness, transport wagons, and all but thirteen of the divisional motor transport vehicles were also issued by British ordnance stores in place of the Canadian pattern. This abandoned material had been purchased at a cost of 4,775,902 dollars by "extra departmental agents," and the auditor-general protested continuously that he could find no authority for the expenditure.[1]

The most specific comment upon the equipment of the 1st Division, is contained in a report made to the War Office by Major R. M. Campbell, staff-captain, under date of January 22, 1915. This officer found all the harness new and serviceable, but unsuited for ride-and-drive work; it could not be adapted to team drive except by using a bar and swingle-trees on the end of the pole. He found several types of wagons, but the parts of no one type were interchangeable with another. In many cases the wagons were built from parts of three or four types, and were quite unsound in principle. All the wagons were built of green wood of a soft, white, coarse-grained texture, and would not stand any wear and tear. The result was that almost all of the wagons were warped, split, and splintered, and practically worn out. The one called the "heavy Bain" was the only type that seemed at all serviceable.

The water carts were principally four-wheeled cylinders with one man-hole forward, and a partition in the centre. There was no way by which they could be cleaned; there was no appliance for filtering or clarifying the water. All of this type were condemned. A few of the carts were built to the Canadian service pattern, but had no clarifiers; and from what this officer had seen of Canadian built vehicles he doubted if in all cases the woodwork was sound. He recommended that these be called in, overhauled, and fitted with clarifier, or replaced by British made service pattern vehicles.

There were no Maltese carts with the division. Various units used different types of wagons, but all were unsuitable, and should be called in. Major Campbell thought the blanket wagons, which would only be required for another two months, and the best of the heavy Bain wagons would probably survive that length of time. The divisional ammunition column had 52 wagons, but he doubted if they would stand the strain of a load of ammunition. The same comment applied to the wagons of the brigade ammunition columns.

Two field companies of engineers required all vehicles to be replaced except pontoon wagons and tool carts. The pontoons were in need of re-covering with canvas. Major Campbell reported that a very bad impression was obtained from the vehicles of these units. The tool wagons had warped so much out of shape that they practically required re-making; the units were engaged upon that work. The wood in the wheels in some cases was rotten. He had not had time to inspect the cavalry equipment, but understood that it was in the same state as the rest. His general recommendation was that all first line transport vehicles should be withdrawn and replaced by the British-built service pattern.

An even more concise account of the replacements required by the 1st Division before proceeding to France is contained in a dispatch from the War Office to Ottawa, dated February 15, 1915. The dispatch is in cypher, and no unnecessary words are used:

"Horse transport vehicles were replaced owing to the following causes—variety of types; parts not interchangeable; weakness of material, and doubt as to strength for loads required. Harness had to be replaced, being unsuitable for vehicles supplied. Motor lorries had to be replaced on account of wear. Only five battalions were in possession of Webb equipment; remaining battalions having Oliver equipment, which had no pack or means of carrying entrenching tool, were completed with Webb equipment before embarking. British service boots were issued, Canadian supplies being unserviceable."[2]

This was the material to which the Minister referred at the time of his retirement, in his address before the Empire Club at Toronto on November 9, 1916,—"Our transport, our rifles, our trucks, our harness, our saddles, our equipment, our shovels, our boots, our clothing, our wagons, —these were all set aside; and in many cases they were supplanted by inferior articles."[3]

At length in February, 1915, the 1st Division, less certain units, proceeded in 84 trains to Avonmouth on the way to France. The troops embarked between the 7th and 12th of the mouth, and sailed for St. Nazaire. On account of a storm in the Bay of Biscay, which delayed a number of the transports, disembarkation was not completed until the 15th. Two medical units had preceded the Division, namely the sanitary section, and a motor field ambulance workshop on loan from the British service. These landed at Rouen on February 7. Before the 19th, twenty-one motor ambulances were issued to the field ambulances, and nine heavy horsed ambulances, to replace the eighteen light vehicles in their possession. As the Divi-

sion arrived, a Canadian branch office of the Deputy Adjutant-General was established at Rouen, which was the 3rd Echelon headquarters, one of its functions being the compiling of casualty returns from records furnished by the medical services. The procedure by which these returns were made was highly technical and elaborate, and was one of the most exacting duties to be performed in the field.

### Neuve Chapelle—Ypres

On arrival by rail in the zone of operations the Division was billeted in the area east of Hazebrouck. The troops entered the front line on March 3, and first came upon the scene of action at Neuve Chapelle, "by keeping the enemy actively employed in front of their trenches."[4] The only Canadian medical unit taking a specific part in this action was No. 1 Casualty Clearing Station. On March 8, it had arrived at Aire. On March 10, casualties were being admitted, 50, 150, and 350 on three successive days.

On April 5, the Division proceeded by march and arrived April 12, in the Poperinghe area. On the 17th it took over the sector in the northern face of the Ypres salient. On April 22, the enemy after a bombardment lasting three days delivered an attack under cover of a discharge of poisonous gas. The Canadian casualties were 5,500, killed, wounded, and missing. During the battle the field ambulances augmented by No. 8 Indian, No. 10, and No. 12 British cared for 10,043 casualties. Of these, 79 officers and 1,983 men were Canadian; the remainder, 304 officers and 9,738 men were of other forces. This proportion of one in five also represents the strength of the Canadians in comparison with the whole force engaged. No. 3 Field Ambulance alone evacuated 5,200 cases during the week.

The medical arrangements were under the direction of Colonel G. L. Foster, who was awarded a C.B., and

his deputy, Major H. A. Chisholm who received a D.S.O. It was during this action that Captain F. A. C. Scrimger earned a V.C. The C.M.G. was conferred on Lieut.-Colonel F. S. L. Ford in command of No. 1 Casualty Clearing Station, which had previously done good service in the adjoining army and in the present action received the overflow of cases. Captain T. H. McKillip received the D.S.O., and Captain A. K. Haywood the military cross. The officers commanding the Ambulances, Lieut.-Colonels A. E. Ross, D. W. McPherson, W. L. Watt were mentioned in despatches with Majors J. L. Duval and E. B. Hardy, Captains F. C. Bell, P. G. Brown, A. S. Donaldson, J. J. Fraser, R. H. McGibbon, J. D. McQueen, and E. L. Stone. Lieut.-Colonel A. T. Shillington, Matron E. Campbell, and nursing sister M. P. Richardson of No. 2 Stationary Hospital also received mention. The other ranks were also generously remembered. From that day, of which the story has so often been told, there was perfect confidence in the British Army that the Canadian medical service would adequately perform any duty to which it was assigned. In reality the service came into actual being at Ypres as a living and powerful force. The detail of these operations will be given in proper sequence.

### Festubert—Givenchy

After the battle of Ypres the medical units of the 1st Division began to drift southward; No. 1 Field Ambulance by Watou to Bailleul; No. 2 by Hillhoek; No. 3 to Steenwerck. They were about to take part in the series of engagements that lasted from May 9, to 26, known as the Battle of Festubert. The 3rd Brigade was involved on the 18th, and on the following day the Division formally took over the area. Tent sections of the three ambulances operated as a single unit at Hinges. The arrangement served admirably, and won approval from the Army. The

units worked side by side with an operating tent for serious cases, and another for walking wounded. The motor ambulances delivered their patients to each in turn. The regimental aid posts were also combined, as the front was narrow. For purposes of evacuation hospital barges were employed, and conveyed the more serious cases from the main dressing station to Dunkirk or Calais. Each barge had 30 beds, with a medical officer, four nurses, and orderlies. As a further development of the policy of direct evacuation, casualties were taken from the front to the canal, and their wounds dressed on the barges.

The first two days were wretched with rain and cold, and the work of the stretcher bearers was difficult along the mile journey. By night horsed ambulances could reach Indian Village, and by the 20th, when the weather cleared, motor vehicles advanced beyond Festubert to the great relief of the wounded. The action centred in the "Orchard," and the rescue of the fallen demanded great courage. Of one volunteer party of eight bearers from No. 3 Field Ambulance four were wounded and two killed. The number of casualties treated in this action was 996 Canadians and 111 British.

Certain departures from established procedure were justified by the experience gained. Evacuation of wounded was made direct without passing through a casualty clearing or even a main dressing station; ambulances were operated as single units, and aid posts were combined; an advanced medical headquarters was formed with an officer in control; regimental officers were to report the probable number of wounded in their areas; wheeled stretchers were more freely used; provision was made against slightly wounded wandering out of their own battle area.

The action of Givenchy was fought on June 15, 1915. The field lies little more than a mile south of Festubert. The Canadian Division held a front of 1000 yards north

of la Bassée Canal. There was room for only one brigade, and the field ambulances served it in turn during successive weeks. The others cared for the sick of troops in reserve and rest. The headquarters were at Vendin, near Bethune; the main dressing station was at Le Quesnoy, clearing to Chocques; the advanced report centre was near that station. The arrangement worked as if it were automatic. Up to noon on the 16th, 11 officers and 350 other ranks passed through, and the aid posts had been clear two hours earlier. By night there were 234 additional casualties.

Late in June the Canadian Division was transferred from the IV Corps of the First Army to the III Corps of the Second, and moved northward into the Ploegsteert area, with medical headquarters in Nieppe, the dressing station at le Romarin, and the divisional rest station in Bailleul. On July 15, pursuant to the transfer of the Division to the Second Army, No. 2 Field Ambulance moved up from Steenwerck near to Neuve Eglise to conduct a main dressing station in tents; a combined divisional rest station and corps convalescent camp was maintained at Bailleul. With minor changes these positions were held until April, 1916, a period of nine months.[5]

The 1st Division by all these labours was a seasoned body of troops before any other divisions arrived. The medical service had become strong, flexible, and swift. The wisdom learned was transmitted to the other divisions as they arrived by direct instruction and by the posting of experienced officers to the later formations; but the 1st Division never lost the authority it acquired in those days when it was the sole Canadian force in the field.

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[1] Militia and Defence Memo. European War. No. 1. p. 57.
[2] H.Q. 593-1-10, Vol. 2.
[3] *Canadian Annual Review, 1916.*
[4] Sir John French—Despatch April 5, 1915.
[5] *The War Story of the C.A.M.C.*, Adami, pp. 179-212.

# CHAPTER IV

## THE SECOND DIVISION

MOBILIZATION—THE CROSSING—TRAINING AND EQUIPMENT IN ENGLAND

The Second Division was mobilized, trained, and dispatched not in haste but with some semblance of order. The component medical units were No. 4, 5 and 6 Field Ambulances. The accessory medical units were No. 2 Casualty Clearing Station, No. 3 Stationary Hospital, No. 3 and 4 General Hospitals, and No. 2 Sanitary Section.

No. 4 Field Ambulance began to mobilize on November 6, 1914, in Winnipeg, where A Section was formed by Major W. Webster. On January 6, 1915, C Section joined from Calgary, and on January 13, B Section from Victoria. The winter was favourable for training, and the ambulance left on April 14, for Halifax.

No. 5 Field Ambulance was partially mobilized in Hamilton on November 9, 1914, in command of Lieut.-Colonel G. D. Farmer. Ten days later it moved to Toronto where it was quickly completed from various militia units. On April 15, the ambulance entrained for Halifax.

No. 6 Field Ambulance was assembled in Montreal. It arose out of No. IV, an old militia unit which had long been in existence, but was now little more than a nominal formation as many of the officers had gone overseas. The new unit was mobilized as from November 13, 1914, under Captain Philip Burnett. This unit was recruited up to full strength at the armoury. With a generosity very common at the time, a warehouse on St. James' Street was



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placed at the disposal of the Department which was to make the necessary alterations and install sanitary appliances. There was some delay in making these arrangements as the local member of parliament was absent, and he alone was in possession of the patronage list of firms that had qualified for doing the work. From December until the following April training was carried on. It was well ordered and thorough. Classes for first aid were established. Motor drivers were trained. Horse lines were set up. Drill and route marches were incessant. Equitation was learned. Field exercises were held.

On February 18, Major R. P. Campbell returned from England to take over the command. He had previously organized an ambulance and taken it to Valcartier, but the unit was broken up; the officers were scattered, and he was detailed to a base hospital. Training was continued with fresh interest in spite of the disabilities of a severe winter. Inspections were made by civilians in official positions and occasionally by a discriminating soldier like General Lessard.

After the customary rumours and reports orders were received to entrain on April 16. In the morning the ambulance marched out at full strength with the proper complement of officers, with personal equipment, haversacks, and field panniers, but without transport. The port of embarkation was Halifax. There were six troop-trains on the road. The run was made according to schedule, and Halifax was reached the following day before midnight. Troops to the number of 3,000 had assembled, and embarkation of the medical units was complete on April 18, at midday, in comfort and without unpleasant incident. The three field ambulances met for the first time, and began a career of friendship that remained unbroken until the end. Some of the officers served continuously with their units and returned with them four years later.

The ship was the *Northland,* formerly the *Zeeland,* as it was known in the earlier convoy. In addition to the medical units of three field ambulances, a stationary, and casualty clearing station, three field companies of engineers were carried, making a total of 1,700 troops with 78 officers. Of this voyage many diaries are extant, and a few details are set forth from the most pertinent of them:

At sea, April 21, 1915: Left Halifax at 6 p.m. Sunday, supposing we might lie in the stream; but when the ship carried us past the harbour lights and out to sea, it seemed incredible after the long weeks of waiting that we should be gone. This is Wednesday morning. We have been making only 10 knots, which means a 12 days' voyage at least. The orders were to join the *Grampian* at a point on the Banks and our escort the *Cumberland,* which was to come from St. John's; but the weather was thick, and we proceeded. We are now well clear of cold, fog, and storm. The weather is fine, the air warm and heavy.

April 23. No chart is posted. We are not told where we are, but it must be far north. The tail of the *Bear* is over the mast-head, and the north star three-quarters way up the sky. At 11.30 a.m., a ship was seen seven miles ahead in the mist. She was lying to, and at noon we came up with her. This was the *Grampian,* and as we proceeded side by side there was much talk with semaphore and flag. The only message I could interpret was: "Reduce your speed; a cruiser is astern." By night we made out the cruiser's mass, with a slight glow at the mast-head and a green tinge amidship. No other lights from any ships are visible.

April 25. At 3 p.m. the cruiser *Cumberland* was abreast. She lowered a boat with ten oars. The sea was calm, and the boat came under our lee. A boy of about 15 years of age climbed on board. Without a word he went

on the bridge. In a few minutes he went down the side and rowed to the *Grampian*. In the meantime the *Cumberland* had crossed our bows, and was standing to the north to pick up the boat. Whilst the captain was waiting, he signalled that the Canadians had been heavily engaged at Ypres two days before; that the losses were heavy, but they "had done very well." Then he drew ahead, and the *Grampian* fell astern.

April 28. This morning the *Cumberland*, our silent and faithful friend, left us. For nearly a week she bore patiently with our slow speed. Then she turned and fled. At the same moment two destroyers appeared out of the north, their heliographs flashing in the sun: "I am the *Boyne*; the other is the *Foyle*. Follow the course arranged yesterday." The moon was full as we sailed up Bristol Channel. Under orders from the *Boyne* even the navigating lights were put out. The *Foyle* went ahead as pilot. The *Boyne* with all her lights ablaze was forward and off to port, so that if attack were made, she would receive it, like a wild bird flying with "broken wing" to protect her young.

Avonmouth, April 29. 7 a.m. Disembarked. The train moved off; clear of the town it was the English spring at its height,—sunny day, dandelions, then daisies, then the hawthorne in waves of white breaking upon the hedgerows. The route lay by Reading, Acton, Clapham, then south-east through Kent. At 5 p.m. reached Westenhanger, and there detrained. A march of two miles brought the mobile medical units to West Sandling camp which is in the Shorncliffe area.

The origin of the medical units designed for the lines of communication of the 2nd Division may be briefly stated, and also their career until the time they became army troops in pursuance of the policy of concentrating hospitals in

areas to serve all needs. After that time, units for the lines of communication were not mobilized with divisions, but came forward from Canada as the general situation required.

No. 2 Casualty Clearing Station was mobilized in Toronto, February, 1915, under Lieut.-Colonel G. S. Rennie, and arrived in England April 29; it took over the hospital at Moore Barracks, where it remained until September 16, when it went to France, arriving at le Havre September 17. The officers were detailed for duty in the various British hospitals in the Havre area until the unit opened at Aire on January 1, 1916, under Lieut.-Colonel J. E. Davey.

No. 3 Stationary Hospital was mobilized in London, Ontario, February 17, 1915, under Lieut.-Colonel H. R. Casgrain. It arrived in England April 29, and was detailed for duty at Moore Barracks in conjunction with the personnel of No. 2 Casualty Clearing Station, where it remained until sailing for the Mediterranean on August 1, 1916.

No. 3 General Hospital was the especial product of McGill University. It was mobilized in Montreal, March 5, 1915, under Colonel H. S. Birkett and arrived in England May 15; it was employed on duty at Moore Barracks until June 15, upon which date it left for France, arriving June 16, and opened at Camiers on June 19, where it remained until January 5, 1916.

No. 4 General Hospital was organized by the University of Toronto and was mobilized March 25, 1915, under Colonel J. A. Roberts. It arrived in England May 27, and took over the Shorncliffe military hospital, where it remained until October 15th, when it sailed for Salonika and disembarked November 9, receiving patients the same day.

For the first time in any war the universities organized medical units. The example was set by McGill which sent overseas a general hospital in command of the Dean of the medical faculty. Toronto, Queens, Western, Manitoba, Dalhousie, Laval, St. Francis Xavier followed; and in the United States, Harvard, Chicago, and Western Reserve.

Two ambulances, Nos. 5 and 6, moved into tents at Otterpool on May 28, and No. 4 to Dibgate. There they remained until September 15, when they entrained for France. This time—four and a half months—was passed by the 2nd Division in training and waiting for equipment. Ottawa had not yet abandoned the task, and the War Office had not taken it up to the exclusion of all else, for the War Office had other preoccupations. Provision had to be made for medical service alone to a force with a total strength of 3,500,000 men operating in every variety of country and climate. Hospital beds in the kingdom and in various war zones to the number of 637,746 must be equipped and maintained. Medical units of all descriptions numbering 770 had to be mobilized and dispatched to the expeditionary forces. Seventy-five hospital ships or ambulance transports were being kept in operation, and these brought to English shores 2,655,025 sick and wounded for treatment and disposal between August, 1914, and August, 1920. The personnel for medical services at the time of the armistice amounted to 144,514 officers and other ranks, and all this force must be trained, equipped, and administered.[1]

To finish the record and explain the delay in completing equipment for the 2nd Division, it may be added that the number of medical units mobilized in England for dispatch overseas was 235 field ambulances; 78 casualty clearing stations; 48 motor-ambulance convoys; 63 ambulance trains; 4 ambulance flotillas; 38 mobile laboratories;

15 *x*-ray units; 6 dental units; 126 sanitary sections; 35 depots of medical stores; 41 stationary hospitals; 80 general hospitals, besides convalescent camps.

It was August 31 before the transport wagons arrived for the ambulances, to replace the Canadian farm wagons previously supplied. As yet there were no ambulance-wagons, horsed or motor, and no water-carts. The Canadian water-wagons when full were too heavy to haul; the weight was on the hind wheels; the whiffle-trees fell on the horses' hocks when the strain was released; the brake would give way under pressure of the driver's foot. Horses were arriving all summer in small lots, and the number was now complete. The quality was good, and they were soon trained to their work. A fleet of motor-ambulances arrived under their own power. They were fresh from the shops near Liverpool; the bearings worked badly, and some repairs were required before they were dispatched with their drivers to France.

The following extracts from the war diary of an administrative officer disclose the difficulties the Canadians had in obtaining equipment, and the difficulties the War Office had in supplying it. Under a reasoned administration the Canadians could have had that equipment supplied in their own country, if only the contractors had been brought under control.

July 3, 1915. Assistant Director of Remounts inspected horses. I drew his attention to difficulty in obtaining extension pieces for harness for heavy draught horses, and arranged this should be supplied at once from Woolwich. Drew attention to neck yokes being too short for heavy draught horses. Light Bain wagons have no chain attachment; hence, whole weight falls on horse's neck; necessary for these wagons to have chain attachments fitted.

July 8. Sent copy of proceedings of board, held in each brigade, on new Oliver equipment to General Carson. Main

faults are: yoke not adjustable; canvas valise tears away from leather braces; pouches unsuitable; waist belt too narrow; entrenching tool heavy and difficult to carry, chafes thighs and bangs about, not bullet proof; colour of equipment too light.

The officer commanding a battalion writes on July 3, "A route march to Saltwood Castle and return was carried out by the battalion in heavy marching order. While the converted Oliver equipment worn is somewhat of an improvement on the old pattern, it was observed to interfere with the men's respiration."

In each ambulance the transport section carried arms for purpose of defence. Reports were now prevalent that the rifles were unserviceable. As late as September 8, those sections were paraded to Sandling where workshops had been set up. The breech was enlarged so that the cartridge would fit more loosely. Each man was allowed to fire two shots into a bank of earth, and if the bolt did not jamb, the weapon was declared by the officer in charge to work to perfection. He volunteered the information that the cause of the trouble was the bad quality of the ammunition supplied from British stores.

At this time Brig.-General J. C. MacDougall, a man in failing health, was in command of the area, and he inspected the medical units on their arrival. Major-General S. B. Steele was in command of the Division. He was held in high esteem by reason of his long public service; but as he was born January 5, 1849, and was now in his sixty-seventh year, he was considered by many on the ground of age alone to be unavailable for more active service. Also, he was suffering from an incurable malady, to which his death was afterward due, and not, as an enthusiastic friend alleged in a provincial legislature, to a broken heart over his failure to be allowed to proceed to France. A heart so easily broken would have found the strain of commanding a division in France even more intolerable.

Political ties and the bonds of friendship were being loosened in the strain of war. General Steele was replaced by Brig.-General R. E. W. Turner, V.C., who assumed command of the 2nd Division on August 17, and a few days afterwards sent word that he was coming informally to visit the medical units. A diarist writes that he "spoke with the officers as if they were guests being presented; he said the merest few correct words, and won an instant devotion. He did not appear to inspect the camp nor did he ask a question. But from that moment his hand was felt. It was felt first by the staff who now spoke not for themselves but for the General."

On February 25, 1915, it was announced that Colonel J. T. Fotheringham would assume command of the medical services of the 2nd Division. The appointment was well received by all ranks and by the public. He had long been in the service; his academic position was assured; his professional status was high; he was trusted as a man of fair mind and generous heart. With the advent of the new divisional commander fresh from France and rich in experience Colonel Fotheringham acquired proper support as head of an important service.

During the long summer of 1915 in England, the medical services of the 2nd Division received a thorough training or rather an education excellent in itself but useless for any immediate purpose and a waste of time; but time had to be wasted whilst the equipment brought from Canada was being discarded and new equipment supplied. Schools were established. The officers of the three field ambulances were formed into a class to learn land surveying "from a professional school-master in a Captain's uniform with staff badges; he carried his black-board with him, and would sell a pencil for a penny, a ruler for six pence, and a graduated scale for a shilling; he would make

a picture of a compass on his board, and the class would repeat the points after he had named them." The wearing of staff badges by nondescript persons diminished the prestige and authority of the general staff. There were lectures in horse-mastership to the drivers, all of whom had already learned the art on Canadian farms, and their instruction was made to include the care of mules, elephants, and camels.

The brigade and divisional exercises were of inestimable value. Two brigadiers were removed from their commands. One brigade was ordered to hold a portion of the military canal which extends westward along the inner edge of the Romney marsh at the base of the cliff. The bridges across the canal had been "destroyed," and the heights were held secure. Suddenly all was over. The "enemy" made a feint on the front, but sent his main body beyond the holding line; his sappers put their pontoons across the canal, and his force proceeded quietly to the rear. The medical units learned the valuable lesson that they are an integral part of the army and subject to disaster in common with it. The commanders learned that mistakes fundamental and fatal are apparent, and could not now be made with impunity.

That summer of 1915 was a delicious holiday for Canadians who for the first time experienced the beauty and delight of rural England. The diaries hold a suggestion of surprise at such beauty: "Last night we returned to our bivouac in Cranbrook on the great Stour in a level plain intersected by ditches deep with water. We marched for a mile along a park bordered with hedges and set with noble trees, descending at times into dank hollows dark with spreading branches".

An order had been issued to the medical service, quite contrary to regulations, recommending officers to keep private diaries. The order was made a pretext for much writing, but many of the manuscripts that have come under observation are reminiscent of momentary irritation and private spleen. A few points of light illumine the mass. Thus: In the morning 57 men had instruction in the care of arms. They lay on the grass in a hollow square. Behind is a plantation of trees, the ground covered with flowers. A sheep with two lambs in her shelter is always with us; the place is at the head of a deep valley; a bugler is practising on the hill and a cuckoo in the woods answers him. The official diaries, on the other hand, too often recall a life of desolate routine.

The reviews were incessant, but these manœuvres were obviously political and personal rather than for military reasons. On July 16, the units of the Division marched from six to sixteen miles merely to discover the places assigned to them for the morrow. Of this review a critical diarist supplies a pointed record: Reveille was at five; at seven we moved off. The rain began. We were wet to the skin as great-coats were not worn. The sun shone, and in two hours we were dry. We drew up by units in fields adjoining each other. Nothing happened. At length we were ordered to dismount. The review was over. The reviewing party had entered through a break in the hedge on the right flank and proceeded to the rear. They then passed behind the units on our left, and were concealed from view. We mounted again. A staff officer rode up and said we were to assemble to hear Sir Robert Borden make a speech, which he did—a very proper speech.

In August a review was held by the Minister of Militia for Mr. Bonar Law in Beechborough Park. The distance was seven miles for the medical units. In the first fifteen

minutes a heavy rain came on, and the troops being again in review order were completely drenched. "The cold trickle of water between clothing and skin," one diarist records, "effectually destroyed any enthusiasm one might have for Bonar Law or any party he might represent. We waited interminably in the rain. The weather cleared, and in the distance was a motor car with staff officers and a single civilian. The party would descend in front of a battalion, walk for a little, then clamber into the car again. As they passed in the distance the officer commanding the medical units rode forward, dismounted, and saluted. There was a dumb show, and with photographers in advance the party proceeded. A slight man in dark clothes with short coat and bowler hat emerged from the photographers, but did not so much as look in our direction. The review was over, and the rain began again. It increased to a storm as we moved off. The water on the road was over the horses' fetlocks, and in two hours we reached our wet tents."

On September 2, there was a review of the whole Division by the King and Lord Kitchener, "a real review, the king and his entourage splendidly mounted." They passed in front of the officers, behind the commanding officer who was a few paces in advance, and the King looked every man in the face, so close that one could feel the keen confident gaze of the sailor and king, and see, as one present remarked, "his lovely Stuart eyes—blue with brows beautifully arched." This review was a sign of the end. On September 11, orders were issued to move off "in a few days." On the following day the final order came.

[1] *British Official History of the War. Medical Services Gen. Hist.* Vol. 1, p. xiii.

# CHAPTER V

## THE FIRST WINTER, 1915-16

Three Field Ambulances, the mobile medical units of the 2nd Division, were dispatched to France on September 13 and 15, 1915. No. 4 entrained at Shorncliffe on the former day, sailed from Southampton in the *King Edward* and *Archimedes*, and landed at le Havre the following morning. Next day the unit arrived at Wizernes; and by the 20th the three sections were established in Boeschepe, Westoutre, and Mont Noir. No. 5 entrained at Westenhanger on September 15, sailed on the *Viper* and *Indian*, arrived next morning at le Havre, at St. Omer the following day, and on the 23rd formally took over from the 84th British Field Ambulance at Dranoutre. No. 6 entrained at Westenhanger on September 15, sailed from Southampton on transport E.18, formerly the *Tintoretta* of the "Holt Line," arrived at le Havre next morning, at Wizernes two days later, and at Locre on the 21st.

The detail of the movement of one ambulance from England to the front will suffice for all, as the procedure was nearly the same in every case: Marched out at 3.45 a.m. from Otterpool to Westenhanger, entrained, loaded transport and horses, and moved off in two trains, 15 minutes in advance of schedule. The train had been backed up against a ramp; the ends of the open cars were let down to form a continuous platform; the wagons were run on by hand, and the horses loaded in box-cars from the side. Southampton was reached at 11.45 a.m. Embarkation was

complete in two hours. The horses with girths loosened and bits removed were walked on board to their stalls; the wagons on their wheels, but with poles and shafts removed, were slung loaded into the hold with only six inches clearance between the axles and the combing of the hatches, by means of four chain slings connected to a common link at one end, the other end passing under the felloe and being attached by a hook to the hub of the wheel.

These three ambulances required six trains for their conveyance, but the move was made with the ease of an ordinary passenger service. This ease came by a long experience. In the eight days from August 10, 1914, as many as 334 troop-trains arrived at Southampton, and men, horses, guns and transport were embarked. Between 10.12 p.m., on August 21, and 6.02 p.m., on August 22, the contents of seventy-three troop-trains passed over the docks.

The ship sailed at dark without harbour or navigating lights. Le Havre was reached at seven next morning. The men disembarked; the vehicles were slung over the side; the horses were driven ashore, and as the animals of each unit had a distinctive riband braided in their tails they were promptly led to their places. A march of three miles brought the unit to the rest-camp in a low black field. "No one," an officer writes, "seemed very glad to see us. To welcome us was the surliest sergeant in the British army except the next two I encountered. There we stayed the night, lying in tents without blankets. The commandant was General J. J. Asser, C.B., and he kindly provided dinner for the officers at a moderate price."

In the morning the ambulance marched three miles and entrained, the horses 8 and the men 40 in cars of the same kind. At noon Rouen was reached, Amiens at dark, Abbeville at ten, and St. Omer the following morning. The

troops detrained at Wizernes, and in this place guns were heard for the first time, " away in the northeast, the sound mellow and musical, the notes almost bell-like in their purity." Marched out at 10, by Hazebrouck for Caestre which is Ypres way.

By September 23, 1915, the three field ambulances had taken their positions, No. 4 at Westoutre; No. 5 at Dranoutre; No. 6 at Locre in the convent of St. Antoine, taking over from the 86th Field Ambulance, Northumbrian Territorials. By two o'clock an officer with 10 bearers went forward and in an hour casualties began to arrive. Two days later the battle of Loos was fought fifteen miles on the right flank, and with its failure active operations for the season were at end.

This convent was a stately pile of buildings occupied in part by the mother superior and twenty nuns. They had under their charge two hundred Belgian orphans and sixty decrepit women. A force of three hundred men and an average of three hundred sick and wounded were billeted upon them. This convent was for several years a home for many thousands of soldiers, and lent an air of humanity and religion to the hard life of war. It lay in front of Locre and behind Kemmel hill in the very theatre of operations. A 12-inch gun was in continual action in a hollow on the right, and four 9-inch guns on the immediate front; the place was frequented by troops of all arms; battalions being inoculated; officers for baths, meals, and even for those pathetic banquets by which they strove to keep old memories alive.

This convent was the one centre of civilization in that desolate area, and although it was under the German guns it remained untouched for three years, which, as the Mother said, was marvellous or, correcting herself, miraculous. The courage, virtue, and charity of this reverend woman will

remain as a precious remembrance in the Canadian army. It was she who designed those horse-lines which were described by Sir Herbert Plumer as " the best in the army," and the design came to her as " a revelation from God, as she lay upon her bed, contemplating the misery of those wretched animals."

The Canadian Corps was formed early in September. Colonel G. L. Foster became Deputy Director, and Colonel A. E. Ross succeeded him as Assistant Director of the 1st Division. There were now six Canadian ambulances in the field. The following table shows their disposition, and officers commanding as at December 31, 1915:—

| | | | |
|---|---|---|---|
| No. 1.... | Bailleul..... | D.R.S..... | Lieut.-Colonel R. P. Wright. |
| No. 2.... | Dranoutre..... | M.D.S..... | Lieut.-Colonel E. B. Hardy. |
| | Wulverghem... | A.D.S..... | |
| No. 3.... | Bailleul..... | M.D.S..... | Lieut.-Colonel J. A. Gunn. |
| | le Romarin..... | A.D.S..... | |
| | Neuve Eglise... | C.P..... | |
| No. 4.... | Westoutre..... | M.D.S..... | Lieut.-Colonel W. Webster. |
| | Kemmel..... | A.D.S..... | |
| No. 5.... | LaClytte..... | M.D.S..... | Lieut.-Colonel G. D. Farmer. |
| | Godewaersvelde | D.R.S..... | |
| | Mont Noir..... | R.S. Officers. | |
| No. 6.... | Locre..... | M.D.S..... | Lieut.-Colonel R. P. Campbell. |
| | Lindenhoek.... | A.D.S..... | |

These positions were held during the winter of 1915-16 in support of the dull and sordid trench warfare that marked that year. Through the ambulances sick and wounded passed during those winter months to the number of 8,472, of whom 3,159 were evacuated.

The winter yielded much that was pleasant. One diarist with an interest in the weather supplies continuous notes: November 30,—For a week, clear cold weather. December 8,—A day like a day in spring time with a dry

wind from the south. 19th,—The stars are shining and a gentle wind comes in from the east. 21st,—A soft warm night and a brilliant day. 24th,—A mild spring-like day, the sun bright, the grass green, the nuns' linen like patches of snow against the hedges. 29th,—Continued mild weather, and not unduly wet. 31st,—Last night and to-night brilliant with stars; a cool air by day and shining sun; the surprise of the winter is the pleasantness of the climate. January 5, 1916,—A clear sun in the evening and a touch of spring; the air warm and with that "haziness" familiar in French pictures. The winter wheat is green; the trees are putting forth their leaves, and certain evergreens have a marked growth of flower. 9th,—The spring is coming; the pansies are blooming in the open, and flowers are upon many shrubs. 14th,—The first complete spring evening, like early May in Canada, the whole world filled with a rosy light. 21st,—A flight of blackbirds; the crows that were with us all winter, but in silence, are now beginning to mate.

A diarist in different mood was impressed by an officer's burial: It was a good grave, the earth sandy. The stretcher was at one end. The Jack was removed. Drag-ropes were placed; the body was slung away and gently lowered; the ropes were withdrawn; a few soldiers sauntered over smoking cigarettes. The chaplain took his place, and the men uncovered their heads. When he cast the earth upon the earth there was no sound: the earth fell upon a soft blanket.

In yet a different mood a diarist deals with a more familiar picture. October 28,—Cold rain, so cold and so wetting; the earth is turned to black grease. November 3,—With the heavy rain the trenches have gone to pieces; the men are waist-deep in water; to-day 75 patients were admitted, not sick but exhausted, and in the last extreme

of misery; the horses are to their hocks in mud. 7th,—A whole battalion went sick and was withdrawn; five days is more than men can endure. 11th,—It is quite dark at 7.30 in the morning, and again at 4.30 in the afternoon. The country is a sea of mud. It fills and covers shell-holes. A man may ride into these holes, and lose his horse, himself only escaping if he swim ashore. A horse in many places leaves a swathe in the mud as an otter does in the snow. 20th,—The gun-lines a morass; a tall man on a small horse drags his feet in the mud. The horse has become as cautious as a cat; he will thrust one foot forward testing the ground, and if he finds no bottom he withdraws. 27th,—Sappers digging a new trench cut away limbs of the buried as if they were roots of trees.

The medical service received every possible assistance from other arms, affection from all ranks, and the utmost of respect from general officers. Their visits were frequent, their inspections thorough, discriminating, and sympathetic. General Alderson was indefatigable. Under date of January 2, 1916, one finds this note in a private diary written at a dressing station: General Alderson called and moved amongst the stretchers, about a hundred of them; a kind, gentle, little man; he spoke to the patients one by one, with a pleasant enquiry or a bit of banter for each.

In the same diary one finds a note which, if the early date be observed, will appear to be prophetic. December 14, 1915: I was sitting in a colonel's hut when the door opened and two officers came in. He addressed the one as "General." I stood up. He was a tall large man, well dressed, with a clean, handsome, powerful face, kindly eyes, and an alert bearing. He was told who I was. He said exactly the right thing, in the right words, and in the right tone of voice. When he had completed his business, having asked searching and important questions he went

away. The colonel told me this was General Currie; the war seemed to take on a new aspect.

Another Corps commander also receives comment: July 23, 1916,—General Byng was to make an inspection to-day, and the parade was ready in the proper place; but he came into the horse-lines through a hedge, jumping the ditch as unaffectedly as a farmer would come on a neighbour's place to look at his crops. This is a soldier—large, strong, lithe, with worn boots and frayed puttees. He carries his hand in his pocket, and returns a salute by lifting his hand as far as the pocket will allow.

One incident will serve to illustrate the nature of the work that fell to the field ambulances that winter. It is best described in the words of the unofficial diary from which it is drawn: October 10, 1915,—Last night at 9.45 a message arrived from the 7th, West Lancs. howitzer battery in these terms: "Please remove casualty to-night on N 104 A 34." The message was at once seen to be incorrect. The letter N indicates a certain square on the map; but the remainder was senseless. It was interpreted to mean N.10.a.3.4 which would signify a spot about four miles to the north east, half way to Ypres. The message had been sent at 8.47 p.m. It was received at our signal office at 8.56, and reached us by motor cyclist nearly an hour later. I set out at once in a motor ambulance with a driver, an orderly and another officer as the search was likely to be a difficult one. We proceeded by the Locre-Kemmel road, and turned aside to brigade headquarters to enquire about the route to be followed, what roads were under fire, and which were closed. The night was very dark. We could show no lights. The country was entirely unknown to us. We could only proceed by counting so many turnings to the left and so many to the right, which would lead us into the area indicated by the message. If we missed a turning we were lost.

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We crept along and came to a corner, but the question was,—what is a road? The country is traversed in all directions by paths worn down by troops and guns, and the map takes no account of them. We investigated by feeling with our feet, and walked into a shell-hole filled with water. It was about two feet deep and the edges cleanly cut. We heard the tramp of men, and a battalion from the trenches came by in darkness and silence. Three first-line transport wagons followed, and we knew we were on a road. As the third wagon passed the driver said, "the last" in a quiet, kindly whisper, and we proceeded. When I thought we should encounter another turning I alighted again, and found we were passing by a regiment asleep on the ground. The men's heads lay within a foot of the wheel track. They slept in complete security, since the army is conducted on the principle that each man does his business properly, and if they were run over it would not have been their fault. In their yellow clothes stained with mud they were of the colour of the earth, as if indeed they were already part of it.

At length the road became so bad, we felt sure we must have over-run our course. We found a place to turn and retraced our track. We took the first road which was now on the right, and after about two miles we came upon a few houses. From the map, which we could now use with an electric torch we judged we were at Mille Kruis. Presently two soldiers came along. They knew nothing except that they were walking from la Clytte to Dickebusch and were then about half way. We had taken the wrong turning. We should have carried on along the bad road, which now we did, and presently came to a turning to the left which should lead us into the desired area.

We turned west again. The road was a quagmire, torn with shells, and the motor went in the ditch irrevocably. Capt. ——— and I proceeded on foot to look for a

place merely indicated on a map which we could not even consult. On the right the sky was aflame. The machine gun and rifle fire were incessant. The sound of the small bullets was irritating. The road was a swamp, but beside it on the north side of the hedge was a hard track. We followed this, and it led us into a field of pits like open graves, and between them deep and newly made trenches, and we had only the light of the battle flares to guide us. Passed safely through, we came upon a path guarded by wire. We judged this path would lead us to the battery, but it ended nowhere.

Then away to the south we discovered a faint glow of light. We made our way to the spot, and heard the welcome challenge of a sentry. He was of the R.G.A. and knew nothing of the 7th. He could not know since heavy artillery seldom moves. He agreed to conduct us to the officer's dug-out. It was now 2 a.m., and the officer was asleep. He was cordial, but he could only show us on the map where he was. He was kind enough to send a man to lead us out of his area, which he described, with some pride, as a very trappy one, and to set us on "a road". As we walked we encountered a sentry of the 14th C.F.A., and he led us underground to the telephone. We got communication with the 7th, but as they had just moved in, they did not know where they were in terms of the country. The man at our end did not know where he was even on the map. I asked the 7th Lancs. if they had any landmark, and he said only a big tree, but I reflected that there are many big trees in Belgium. He arranged to send a guide to his entrance from the road, and we set out to find the guide. As a matter of fact we were not 300 yards apart, but the sentry of the 14th C.F.A. directed us south instead of north, and in an hour we arrived safely at Mille Kruis once more.

We consulted the map, and freed our minds from all local information. We followed the pavé road toward Dickebusch, until we should come to the Vierstraat road. We found this road and turned right hoping to find our guide at the big tree. But there was no road, or rather, roads were everywhere. It was four o'clock. If we could not find the wounded man, we could not get help to lift the ambulance out of the ditch, and it would be under fire at daylight. We were thinking of lying down under a hedge, but we should probably have had to remain there until the following night. At length I noticed a "big tree" and heard a big voice in challenge. It was our guide, and he led us through a field to a chink of light that came from the ground. The hatch was lifted and we descended. There were two officers, and the third lay on the ground wounded in the head by a shell. He was able to walk, and the two officers came with us. They brought four bombardiers with hand-spikes and planks. In ten minutes we found the ambulance, and in ten minutes more we had it on the road. We backed it down to the highway. The commanding officer's name was Lee-Warner, a most comforting man. We put on speed as day was breaking, and at 5.30 reached the advanced dressing station. We dressed the patient's wound, gave him hot food, and put him to bed. I changed my clothes, and at 8 o'clock we continued our work, as we were in charge until the following Monday morning.

### St. Eloi—Mount Sorrel

In the spring of 1916 the two Canadian divisions moved further up into the salient, and by April 3, were in position. The heavy fighting around St. Eloi was about to begin. The convoy was clearing to Remy Siding, the lightly wounded being carried in omnibuses, thirty at each

trip. Before moving out the 3rd British Division had exploded their mines, and there was a frightful struggle for possession of the craters. The paths and trenches disappeared, and in the confusion it was impossible to remove the wounded for twelve hours. Some were hysterical, and some maniacal, bound to their stretchers. One man had lain for four days with arm and leg broken; the wounded officers were gaunt with pain, loss of sleep, and the general horror. These conditions culminated on April 18 in a northwest gale of wind and rain.

Early in June heavy fighting was resumed at Mount Sorrel. Sanctuary Wood was the centre of these operations, and the brunt was borne by the 3rd Canadian Division. The medical service of that division received especial praise. The Director-General expressed his "keen appreciation of the splendid services rendered," and his "deep regret that Lieut.-Colonel A. W. Tanner should have lost his life in the action." He thought the report of the operations "admirably drawn up". The medical director of the Army considered "the arrangements very complete, and evacuation carried out in difficult circumstances with rapidity and precision and a minimum of suffering to the wounded." He thought "the work of the ambulance drivers in difficult and dangerous circumstances beyond all praise." The Army Commander himself signified his "appreciation of the gallant and devoted manner" in which the work had been done.[1]

The following table shows the disposition of the field ambulances as at April 4, 1916:—

| | | |
|---|---|---|
| No. 1. | Poperinghe | H.Q. |
| | Brandhoek | M.D.S. |
| | Asylum, Ypres, and Maple Copse (attached to 3rd Div.) | A.D.S. |
| No. 2. | Vlamertinghe Mill | M.D.S. |
| | Bedford House | A.D.S. |
| | Kruisstraat and Railway Dugouts | A.D.S. |

| | | |
|---|---|---|
| No. 3. | Wippenhoek | D.R.S. |
| No. 4. | Boeschepe | D.R.S. |
| No. 5. | Remy Siding (attached to 3rd Div.) | D.R.S. |
| No. 6. | Ouderdom | M.D.S. |
| | Bedford House | A.D.S. |
| | Dickebusch | A.D.S. |

The commanding officers were unchanged, except that Lieut.-Colonel C. P. Templeton had replaced Lieut.-Colonel J. A. Gunn in No. 3.

At this time, April 4, 1916, the ambulances for the 3rd Division were coming forward, their disposition and commanding officers being as follows: No. 8, in England, Lieut.-Colonel S. W. Hewetson; No. 9, at le Havre on the way to the front, Lieut.-Colonel C. A. Peters; No. 10, at le Havre on the way to the front, Lieut.-Colonel A. W. Tanner; also No. 7, Cavalry at Belloy with the Canadian Cavalry Brigade, Lieut.-Colonel D. P. Kappele. Colonel A. E. Snell was medical director of the division.

These units, less No. 7, for the 3rd Division were organized in Canada, the officers and other ranks coming direct with the exception of the seconds in command who were obtained from the field ambulances of the 1st and 2nd Divisions. The 3rd Division was already in France, the medical needs being attended to by field ambulances loaned from the 1st, and 2nd Divisions, namely, Nos. 1 and 5. Four additional were yet to arrive for the 4th Division and the Corps; but the formation of these also may now be considered, and the record made complete.

No. 7 Cavalry, was organized in England January 10, 1916; the officer commanding had already had service with No. 5, and the second in command with No. 1. The other officers were drawn from the training school, and had not seen service in France. Some of the personnel was drawn from ambulances in the field. This unit landed at le Havre, February 13, 1916, and by February 16, it was managing a rest station at Belloy for the cavalry brigade. No. 8

mobilized in Calgary, December 13, 1915, arrived in England April 9, 1916; landed in France May 8, and by May 11 was in control of a divisional rest station at the front. No. 9 mobilized in Montreal, January 3, 1916; arrived in England March 12; landed in France April 4, and by April 12 was in the front line. No. 10 mobilized in Winnipeg, January 12, 1916; arrived in England, March 12; landed in France, April 4, and by April 12 was employed in clearing the front.

No. 11, 12, and 13 Field Ambulances were organized in Canada early in 1916, for the 4th Division. All the other ranks and most of the officers were obtained from Canada, but the officer commanding No. 11 had already had service in the 1st Division. The other two had officers with experience posted to them. No. 11 was organized early in 1916, by Lieut.-Colonel J. D. McQueen; arrived in England May 30; landed in France August 11. No. 12 was organized in Winnipeg early in 1916, by Lieut.-Colonel H. F. Gordon; arrived in England July 3; landed in France August 12. No. 13 was organized in Victoria early in 1916 by Lieut.-Colonel J. L. Biggar; arrived in England July 9, and in France, August 13. The medical director of the 4th Division was Colonel H. A. Chisholm.

No. 14 was organized in England in May, 1918, by Lieut.-Colonel G. G. Corbet from units which were originally intended for the 5th Division, with some officers and men who had already seen service in France. The unit arrived at le Havre June 6, 1918, three days later at Beugin, being detailed to manage the corps rest station and minister to the corps troops. The mobile medical units were only then up to their full and final number, but those already in the field after their experience were now ready for the Somme.

[1] Second Army H.Q., A. 1985. 17.6.1916.

# CHAPTER VI

## THE FIELD AMBULANCE

### Origin—Development—Equipment

This march to the Somme will serve as an occasion for considering the origin, development, and constitution of a field ambulance. Out of that will arise certain general observations upon its operation and way of life. From the time that men began going to war they have had some concern for their wounded, if not from motives of humanity at least from prudence, so that being restored to health they could fight again. The field ambulance is the essential battle formation for this ancient task.

War is as old as the race, and wounds go with war; but there has always been a medicine of some kind to meet the need. At the siege of Troy, Podalirius and Machaon were detailed for medical duty and given exemption from all other, and Hippocrates alludes several times to medical service in the army. His son Thessalus was on the strength of the expeditionary force which Alcibiades commanded in Sicily. He was without pay and allowances, but on his return he was awarded a crown of gold. In the Crissaean war the medical officer had a technical galley with complete equipment, and the Spartans had a good service. In the Persian armies the medical officers were obliged to attend the enemy wounded as well as their own.

In the Roman army the development of the medical service is easily followed. Pliny affirms that the Romans

were without physicians for four centuries, and in his opinion they were little the worse for the lack. The soldiers bandaged their comrades' wounds. At times, if we can believe Dionysius, they bandaged themselves, even if unwounded, a self-applied bandage being a neater device in malingering than a self-inflicted wound.

After the battle of Sutrium (311 B.C.), Livy says, more Romans perished for want of attention to their wounds than had fallen on the field. Polybius, writing in the second century, although he described a Roman camp in detail, says nothing of any provision for the wounded. The only physicians appear to have been those whom the commanders or officers took into the field with them for their private service. Later, however, and possibly owing to the example of the Greeks, the Romans along with standing armies established a regular medical service. The first writer who alludes to them is Onosandros (1st Century A.D.), but he speaks as if the custom were not recent. A libertus named Claudius Hymnus, physician to the twenty-first Legion, was honoured with a funeral monument in the reign of Claudius. In the time of the Empire, *Medici Ordinarii* made regular visits to the sick even in time of peace, and in case of serious illness the patient was taken to the *Valetudinarium*. The physicians accompanied the troops on marches and in the field; on the column of Trajan they cannot be distinguished from ordinary soldiers. The Emperor Aurelian, when military tribune, forbade medical officers to take fees from the soldiers; the abuse then must have existed in the 3rd century. As early as the time of Cicero there were special tents for the sick. Each camp had a hospital situated on the left of the *Porta Praetoria* under the direction of an inferior officer called *Optio Valetudinarii*. The medical director was an official called *Medicus Castrensis*, who was responsible to the *Praefectus Castrorum*.

The solicitude of commanders for the wounded is often praised during the period of the Empire. Trajan took off his own garment to make bandages for the wounded. Alexander Severus provided carriages to follow the army for the benefit of the sick. When Valentinian was wounded there was no physician to attend to him, as all had been sent forward with the troops, but we do not read of any measures taken to supply the needs of enemy wounded. The first mention of an ambulance is in the reign of the Emperor Maurice (582-602). A corps called σκρίβωνες or δηπουτᾶτοι was set apart for this purpose. Leo the Philosopher (886-911) augmented the number of the corps, and added water carts to the equipment. In the navy the medical officers were known as *Duplicarii* because they were awarded double pay. According to Galen an ophthalmic surgeon was attached to the fleet which invaded Britain. The military status of the medical officers was even in those days unsatisfactory; and there is yet extant an acquittance roll in which their names are set apart between the officers and the other ranks.[1]

The almost continuous wars during the reigns of William and Mary, and Queen Anne, led to the appearance of field hospitals. Such hospitals existed in the army of Henry of Navarre and during the war for the conquest of Granada, but William III was the first to realize their importance to a British army in the field. They were called marching, and later, flying hospitals, to distinguish them from the general or "fixed" hospitals at the base or on the lines. They were first employed during the campaign in Ireland. They came up after action, took over the wounded on the field, and transferred serious cases to the "fixed" hospitals at the base. They had before them precisely the same functions as now fall to the bearer and tent division of a field ambulance and the casualty clearing station. They had a

special medical personnel. They had nurses, transport, drivers, and men-servants who carried arms. These hospitals disappeared from the army after Marlborough's campaigns, and did not reappear until the 19th century.[2]

The field ambulance, as it is organized to-day, is a creation of the South African war. In that war each brigade had as part of its establishment one bearer company and one field hospital, and each division had in addition a field hospital of 100 beds. These units were independent of one another. There was no continuity of control. At one moment the officer commanding the bearer company, and at another the officer commanding the field hospital, might be the senior medical officer of the brigade. In 1901 a War Office committee recommended that the functions of the bearer company and those of the field hospital should be combined, and four years later this recommendation was put into effect. The new unit was the modern field ambulance. In the Canadian service one was detailed to each brigade of infantry as divisional troops; at a later date an additional unit as corps troops was formed for corps purposes.

As now constituted a field ambulance consists of two divisions, a bearer division comparable with the old bearer company, and a tent division to perform the duties of the former field hospital. These divisions are further divided into three sections, each section being composed of one-third of the bearers and one-third of the tent division. An ambulance will then consist of three small units which are capable of performing the duties of bearers and of hospital, having accommodation for 50 patients each or 150 in all. The arrangements for mounted troops are slightly different, there being two sections instead of three.[3] The peculiar quality of a field ambulance is the ease with which it can be resolved into its component parts for any specific duty and assembled again when the task is done.

In the British army the field ambulance as a rule served an infantry brigade and all the other arms and services in that group or area; in the American army the corresponding unit known as a "section" served a division; in the French army there was also a divisional group of bearers, known as *brancardier divisionnaire;* but they had in addition 16 regimental bearers as the British had. Once a patient arrived at the *poste de secours* he passed out of the medical service and became a problem for the transport.

The personnel of a field ambulance is formed by 9 medical officers and 238 other ranks. Of the officers one is a lieutenant-colonel; two are majors, and six captains. There is in addition a quartermaster; a dental officer and a chaplain are usually attached. The transport consists of 15 riding horses, and 39 draught horses. The horse and motor drivers to the number of 36 are technically attached from the army service corps, but for all practical purposes they are part of the formation.[4]

This transport is all first line, an integral part of the war organization, and ready at all times to go into action. The number of horse-drawn vehicles in the end became fixed at sixteen, with three ambulance wagons added. Of these, three were water carts, four limbered wagons, seven general service wagons for technical stores and baggage, one Maltese cart and one travelling kitchen. Four spare horses were allowed. Seven motor ambulance cars were also included in the establishment.

On the march a field ambulance required a road space of 465 yards, of which 175 were for A section including transport; for B and C sections 135 yards each were allowed with interspace of 20 yards between all. This may be compared with a mile and a half for the fighting portion of a brigade of infantry, and seven and seven-eighths miles for the fighting portion of a division. When an ambulance

moved by rail it required two railway trains although at times one sufficed. In billeting, the staffs and medical units always had the first choice of buildings, an arrangement that was generously observed.

A field ambulance being a completely mobile unit which moves with the front line and operates immediately behind it on advance or in retreat, the design and quality of the vehicles is a matter of urgent importance. At the beginning of the war, horsed ambulances alone were used. In the retreat to the Marne their utter inadequacy was proved, and they were superseded by motor ambulances as the main reliance in clearing a field. But to the end horsed ambulances had quite definite uses. They had access to areas impossible for motor transport where roads did not exist, readily evading shell-holes and making detours into fields, or they could traverse roads in the making with ease to the horses and comfort to the wounded. When their wheels became submerged in the mud a friendly gun-team would usually be found to extricate them. If they upset, they could be righted without that ruin which followed a similar accident to a motor vehicle. On the right front the Somme battle-field was entirely cleared by horsed ambulances over roads which were quite inaccessible to other forms of transport.

Motor ambulances were considered as a possibility in the year 1908. Before that time the theory was that supply wagons could on their return journey assist in evacuating the wounded, but this theory always failed when put to the test. The need of the troops for supplies and the need of the wounded for succour could not be reconciled. In the retreat from Mons it was already proven that mechanical transport was indispensable, and the first motor ambulances went to France with the 8th Division during the first week of November, 1914. On October 21,

it had been decided that all field ambulances should be equipped with three horsed and seven motor-ambulances. This equipment was supplied to all the Canadian units when they took the field.

The water cart has a long history even in modern times. In the form of a barrel on wheels it was obsolete as long ago as 1891; it was top heavy; the barrel was insanitary; the water flowed about and made the draught heavy. Some vehicles of this type were supplied early in 1915, but they never went further than England. They were very good when empty; but when even partially filled the weight fell upon the hind wheels; they would dart into the ditch, and the pole would snap at the largest knot in the wood.

The type finally employed was known as Mark II with a filtering apparatus added, and was introduced in 1906. It contained two filters, one right and one left, so arranged that no unfiltered water could be drawn from the taps. Lockers were fitted with equipment for sterilizing the water with chloride of lime and gauging the amount of material required. It weighed 1,421 pounds, and the tank contained 110 gallons.

The wagon-ambulance was designated Mark VI and was introduced in the year 1903, superseding Mark V of the year 1889, which in turn was an improvement on Mark IV, an experimental vehicle of four years earlier, in that the "lock-under" principle was adopted. In the earlier patterns the wagons were "equirotal," having wheels of the same diameter both fore and hind. They held only two stretchers; there was no room for any attendant or for kits. Mark V was an improvement for transport purposes, but the short lock limited its usefulness in narrow and crowded areas. In the Canadian service there were a few wagons of these earlier patterns,

useless as ambulances, but having a certain permanent utility for transporting those commodities which in Canada are usually loaded upon an "express" wagon. One, at least, of these vehicles remained in service to the end, and a useful career which began in South Africa was completed beyond the Rhine.

In the latest pattern, Mark VI, the main features were a full lock, a wide track of 6 feet; fittings to carry four stretchers with space for an attendant to pass between the pairs; storage for medical appliances and comforts, and for kits of the wounded. It carried 4 cases on stretchers, or 12 sitting, or 6 sitting and 2 on stretchers. The wagon had a cranked body to allow the use of a large front wheel despite the full lock, and it would turn in a space of 26 feet.

The interior was provided with seats, lamps, hand-straps, fittings to carry five rifles, a seat for an orderly, and a compartment on each side for medical comforts. Under the body four lockers for surgical appliances were fitted, and a water tank holding ten gallons. The whole was roofed in, and the driver protected by a hood and side curtains. Springs and rubber tires completed a comfortable and commodious vehicle. It was drawn by two or four horses; the weight was 2,638 pounds, and the cost about nine hundred dollars. None of these were made in Canada.

With the advent of motor ambulances these horsed vehicles became obsolete, except for traversing rough and miry ground; but for that purpose they were too cumbersome and unnecessarily perfect in their equipment. On the British establishment a light ambulance was introduced in 1905, to accompany mounted troops; but it was never issued for infantry. The equirotal wheels and transverse front spring give great flexibility on rough ground. Such a vehicle, even if drawn by one horse, would have

served admirably for conveying the wounded to points as far forward as motor ambulances could reach. Room for two stretchers would suffice, and no equipment is required for so short a journey.

The field ambulances with their own horsed vehicles, or even with motor vehicles, were incapable of evacuating casualties in all circumstances from their advanced to their main dressing stations; they were still more helpless in removing those casualties to the clearing stations. Out of this need the motor ambulance convoy arose. The motor-ambulance convoy is a mobile medical unit with an establishment of 50 cars, a workshop for all ordinary repairs, three officers and 122 other ranks. The usual business of this convoy is to convey patients from the main dressing station, a distance of some miles to the casualty clearing station, although in special circumstances it might approach the advanced dressing station and so clear the field with great speed.

By the end of 1914 as many as 324 departmental ambulance cars were operating in France. From these two convoys were formed, and six more were created with cars privately donated. By the end of the following year 18 convoys had been sent overseas, and before the termination of the war 48 had been mobilized. They would be concentrated at any point where operations were in progress, coming literally in hundreds of cars apparently from nowhere, and clearing the most crowded front in a space of time that was measured in minutes. All patients were alike to them, and one convoy might carry wounded belonging to Imperial, Dominion, or allied formations, and even the wounded of the enemy. In a convoy seen at Vadencourt on September 7, 1916, one car bore the legend, "Gift of the Maharajah of Gwalior"; the next was inscribed, "From the children in Nova Scotia", and

the third bore the name of a Labour Council in an English provincial town. The Canadians in common with the whole army depended upon these convoys. They also had use of the ambulance flotillas on the Calais and Dunkirk system of canals as well as those on the Somme.

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[1] Prof. S. B. Slack, private memorandum.

[2] *Roll of Commissioned Officers in the Medical Service of the British Army, June 20, 1727 to June 23, 1898.* Col. William Johnston, C.B., Aberdeen, 1917.

[3] *British Official History of the War—Med. Serv. Gen. Hist.* Vol. I.p. 8.

[4] War Establishments, 1915.

## CHAPTER VII

### THE SALIENT TO THE SOMME

The march to the Somme began late in August, 1916. It would be without profit to trace the route of all thirteen field ambulances from the Salient to the Somme. The record of one, drawn from various sources, which marched out on August 20, will suffice. There are many diaries extant, and the impression can best be preserved by retaining in part the diary form. For nearly a year three of the ambulances had been in the Ypres Salient, and three, those of the 1st Division, for eighteen months; those of the 3rd Division for three months, and any change, even to the Somme, was welcome.

To move an army corps is a simple, but precise, affair. The corps proceeds by divisions; divisions proceed by brigade groups; brigades by battalions. All arms and services have their place—artillery, sappers, pioneers, ambulances, and train. These various units at the initiation of the movement may be scattered over the countryside. They can be set in motion at a word as easily as if they were railway trains. The secret is to start each unit at the proper time, so that it will fall into the column at the appointed place. The capacity of roads is limited. Roads make detours. They cross and converge. It demands nice calculation to set the whole corps going upon a main line of communication fifty miles long. A unit of one division, for example, may find itself well to the rear when the move-

ment from the front begins. It must move out to give place to an incoming unit, and there it must wait until another division has passed, and its own has come down. On the first day a unit moves out by a short march into the open country. On the second day it makes a long march, and waits in billets until the appointed time. The account that follows is consolidated from various sources,[1] and for convenience is cast in narrative form.

A short march brought the ambulance from Belgium into France. Every mile the scene of desolation faded. The hops were now hanging in festoons, the bud well formed, and the clear ground between the rows of high poles seemed like an endless bower. By noon we came into a large farm which was at our disposal. The farmer made us welcome. He was a grave, handsome man. His only son went to the war two years previously, and had not been heard of since.

Next day came the long march; at least it was considered long and no secret was made of the opinion. By this time the ambulance was a veteran one, and not a man fell out. It was a holiday for these young Canadians, walking through the pleasant country. War alone could have created such a day upon which peaceable and peace-loving boys should march on the business of war through villages which bore the names of Quaestraete, Oxelaere, Bavinchove, Noordpeene, Helsthaege, Volkermckhove, and Bollezeele, the place of rest. The day's march and the quiet interval that followed was an interlude between Ypres and the Somme. We had moved out at 7 in the morning. Rain threatened, but the farmer assured us that the "barometer was good." The farmer was right. The morning continued cool and cloudy until we climbed the shoulder of Mt. Cassel. Then the sun came out, and we had brilliant August weather, with the light in a strong blaze travelling from

field to field. France disclosed to us all its dignity, beauty, and richness in dainty châteaux half hidden in wooded parks, in massive buildings set in large undulating and hedged fields. It was for this treasure-house France fought.

Towards evening we gained the summit of a hill through a long avenue of trees. The land fell away to the left. A yellow road led down the slope and upward again towards the west. Red roofs were shining in the sun across the valley, and a single spire lifted itself to the sky. The quartermaster came riding back and led us to this spot.

The march was twenty miles. We had been in the saddle, or afoot, for nine hours, and there was yet something to be done before we sought our billets. But we had done it so often that now it did itself. Wagons were parked and off-loaded. The sixty horses were put on their lines. Hospital tents were erected. The cooks were at work. The men were fed, and the details of the camp were left to those who were responsible for them.

There was dinner at an estaminet—hot soles from the sea in a rich brown sauce, two pairs of portly ducks, yards of crisp bread, butter fresh from the dairy, and coffee made with a loving hand. The woman served the meal with a light heart. Her husband was *permissionaire;* he sat in his own kitchen smoking his pipe, and we gave him much respect.

We were in civilization once more. Each house stood square on its own bottom. The walls were intact, and true as a plummet could make them. The church had a spire and its windows glowed in the sun. The place was undefiled by débris of war. Women walked in the streets, free and unafraid. We spoke with them. Fresh from witnessing the bowed and broken women of Belgium, who creep in the gloom and mire of their ruined homes, or toil in their heavy black fields, these French women seemed

to be creatures of life and gaiety; but at a chance word the smile and sparkle would fade. In the presence of unshed tears the conversation died.

When the newness of the situation wore off, the surrounding district afforded fresh interest. To obtain a general view one climbed the church tower. It was a blue, blowy afternoon, following a sunny, showery morning, and earth and sky were at their cleanest and freshest. From this elevation of hill and tower there was much to be seen: to the north—Dunkirk, with a flash of breaking wave in the Channel beyond; Gravelines to the west of that; Calais itself was beneath a dun cloud. Two years ago the advanced guard of the enemy was arrested in this very town. The enemy was within actual sight of Calais. That will be forever a bitter moment in his history.

The village to the north stands upon higher ground, and from its church tower on a clear day the cliffs of England can be seen. Best of all we were out of the mud. With the nearness to the coast, the nature of the soil had changed, and the roads were crisp with sand. In Belgium the horses slid and slipped over the greasy earth; here their hoofs bit into the path with a clean, crunching sound. This was riding for pleasure, by curving paths and sunken lanes as beautiful as any in England.

Meanwhile the battle of the Somme was in progress. Officers were returning who had gone to prepare the way. They furnished us with an estimate of the casualties we should be obliged to care for. They explained the lie of the land—Tara Hill, the Sunken Road, Death Valley, Casualty Corner, Pozières, and Courcelette. They told us what was expected of the Canadian Corps.

In the morning we moved out upon the road at daybreak. It was a morning heavy with clouds. The sun leaped up red. We took the road southward by Watten,

and as if the portent were not complete, a rainbow raised its arch in the western sky. "A rainbow in the morning is the sailor's warning," a sergeant said. And it fell out as the sergeant had foretold.

September 5, 1915. The ambulance had rested. The news that kept drifting up from the south was not cheerful. In Belgium for the past year we had lived in a permanent line; in commodious cellars; in caves well roofed with timber, earth and brick; under sound canvas or metal that defied the rain from above. But now the talk was of "field service," in an area devastated of any habitation above the ground, and little chance of shelter, except a refuge in the warm heart of the earth. A blanket and a ground sheet was the most that was promised; but the first lesson of war is, that nothing is ever as bad or as good—as it looks. So there was a cheerful cynicism in all minds. Orders were to live in the open, to sleep in the fields unless rain fell, rather than in houses unless it were fine. These two sets of alternatives are not identical. It is much easier to go out when it is fine than to discover a place of shelter when it rains. Someone else has always found it first.

Three things to the civilian are a marvel; how the soldier under all conditions of weather keeps well, clean, comfortable. A soldier falls into one of three categories: well, dead, in hospital. As armies do not carry their sick or their dead with them all soldiers on the march are well. A soldier is clean if his buttons, belt, and boots are clean, and he himself shaven; his clothes are already of the earth earthy. It is his business to appear comfortable, even if he is not so. For the men it is all very simple, because a man may bear upon his back as much as he likes for his protection against the weather, for his health, comfort, and cleanliness. For the officer things are not made so easy. He is allowed a weight of thirty-five pounds only on the

baggage wagon, and very little on his person because he rides a horse. If he is not merciful to his beast, the transport officer is a most merciful man, and will see that the horses are not imposed upon.

And yet it is a delicate way of travelling, with everything under one's hand for any emergency of weather. Within certain limits each officer devises for himself a certain plan of equipment which will suffice for a campaign. He and his horse are one, and between them they carry all that is needful for the composite creature no matter what may befall. The bridle is in part a head stall, which is really a halter with a white rope attached to the ring and thrown over the horse's neck in form of a loop. The bits and reins can be removed, and the horse secured by the rope. On the left of the saddle is a picketing peg; beneath the saddle a blanket made fast by a surcingle; on the right is a shoe case, a canvas bucket, and nose-bag in which 10 pounds of corn is carried. And so the horse is provided for.

For one's self: in the left saddle bag is a leathern roll containing all toilet articles—razors, strop, soap, nail-brush, toothbrush, corkscrew, tin-opener, cigarette papers, scissors, nail file. A hair brush, towel, and steel mirror completes. In the right saddle-bag are a pair of socks, a metal flask of rum, which is useful for many purposes, a tin of tobacco, and small cleaning tools. Attached by a strap is the helmet, a messtin with knife, fork, spoon, and silver cup. Upon the cantle is carried a ground sheet rolled, and in fine weather a waterproof cloak with hood, all ample enough to cover horse as well as man when it rains. The officer carries slung a water-bottle, gas-mask, and haversack. The haversack holds food for twenty-four hours, one book, writing material, maps, and many small luxuries.

If one wears a greatcoat, it matters little if the baggage wagon goes astray, although it does carry a sleeping-bag

in which are blankets, ground sheet, extra uniform, underclothing, shirts, collars, and sleeping suit. There is also a dunnage bag for boots, sweater, brushes, candles, and various odds and ends. With this equipment wet or dry does not matter.

It was a sullen morning in early September. At sunrise there had been a gleam of light and an ominous rainbow in the west. The poplars shivered in the garden, and showed the pale underside of their leaves. The area was alive with movement. The various units which compose a division were pouring out of their camps upon the little roads, and proceeding to the junction with a main thoroughfare, ready to take their places in the procession as it passed. An ambulance marches at the rear of its own brigade group; in all groups the order is the same, and position can be taken in the dark.

Within an hour the whole division was in motion upon converging lines; bands playing, columns sliding slowly along the landscape, but all details of the movement obscured by a mist which arose from the river. A division is at a standstill for a longer time than it moves. A train is crossing the front. A bridge is choked. A lorry breaks down. A team baulks at a hill. The movement begins again, but the tale of miles is small when night comes.

But these pauses are not tiresome. One dismounts, and lies by the road. There are late poppies to look at, which soften the lips of the serpiginous trenches, patches of purple kale, golden stacks of grain, roots in yellow piles covered with pale wilted leaves. And in all fields are the indomitable French women at work, without parade and without self-consciousness. None lifted their heads to see the passing show. The sight was too common, and all were quite heedless of the wet, which now began to fall in a drifting drizzle.

We descended the high ground to the river bottom, if one may describe as a river a rush-fringed watercourse overgrown with willow and dank osiers. We crossed a narrow bridge, and ascended the high ground towards a mass of trees that showed green upon the upland and on the map, and bore the mysterious name of *Eperlecques*. Once more the sun came out, and after interminable travelling we found our bivouac in a level field at the southern border of the forest. It was void of buildings of any kind. There was, however, in the near distance a château, but it was already appropriated by a battalion of infantry. In this field we unhooked, unharnessed, watered, and fed the horses, and put them to their lines with the forage which we carried.

An ambulance is always in action. It picks up casualties on the march, and cares for them at the halts. Tents were pitched for the patients—a small marquee for operations, one for an orderly room, and one for the mess. By this time the cooks' fires were burning, and there was a neat repast for all. The sun still shone, but with a treacherous brilliance, and the afternoon was free.

To a Canadian, at least, this was a new kind of forest. In Canada a forest means a forest, a place of rocky desolation choked with undergrowth; raw cut areas with the slash lying ready for conflagration; or a region of blackened stumps over which the fire has already passed. But this forest of Eperlecques was a heavily wooded park with clear springs and shady groves and sunny hills.

The light faded with a sudden finality. It was time to think of some shelter for the night. The horses were happy. The drivers were already resting under their wagons. The motor ambulances were converted into boudoirs for those who were entitled to use them. The men suspected from the morning rainbow, from the mist,

and drizzle, and sudden bursts of sun, that there would be a wet night. Each pair of mates found two short crotched sticks. They fastened them in the ground six feet apart. They laid a long stick in the crotches. They lashed their two ground sheets together with spun yarn, and laid the fabric for a roof, pinning down the edges to the ground with loops of yarn and splinters of wood. A slight ditch and drain completed the simple but secure habitation. The rain yet kept off, and the officers manifested a fine unconcern. They lay in the open. A bell from the church tower rang out seven o'clock. It was now dark in the woods, and the camp was soon asleep.

In the still, heavy dark—a crash, not of guns but of thunder unfortunately, and the rain began to fall. At first it fell softly, and gave a delicious sense of comfort which soon passed into sleep. It must have been some hours later that one awoke with the awful certainty that the worst had happened. The rain was descending upon the trees with a reverberating roar. The water was everywhere. In such circumstances there is nothing to be done but to do nothing, to lie still. The water was already warm. If it could be warmed as fast as it fell, no harm would follow. It was better to be lying down wet and warm than standing up wet and cold. But after several uncertain minutes the cold and water had the best of the controversy; one arose from the clammy chill and came out of the woods. The level field was awash. The water overflowed the ditches, and stood within the tents, but the patients were yet secure upon their few inches of stretcher. There was smoke from the cooks' stoves. Where there is smoke there is fire, and where there is fire there is hot tea. Also there is sweetness, for that is the one standard which an army cook sets for himself. The men stood by and wished for the day, as if the day could make any difference.

Presently the wagons from the divisional train arrived, and dumped the forage and rations for the next twenty-four hours. In the lot were two cases with designation marks, which quite accurately disclosed the nature of the contents. They were consigned to a private owner. Although the contents were little amongst such a multitude, there was two ounces apiece, and all confessed that they were warmed at least down to the waist.

Daylight came. Patients were evacuated by motor ambulance to the nearest stationary hospital. Hospital tents were struck. Equipment was packed and loaded. The camp was cleaned of the last shred of débris. The horses were put to the wagons, and the transport dragged out of the mire on to the hard road, where it was left in column of route with the horses feeding at the splinter-bars ready for a clean start. Riding horses were saddled and the saddlery protected with a ground sheet.

The Division was again upon the move, every day a little further towards the Somme. All the rain in the sky had fallen, but it took twelve hours to come down. The blackness vanished, and solid billowy clouds went before the wind. French children came into the roads, and cried, "Vous allez partir?" In an awed whisper one inquired further, "Pour les tranchées?" They had heard where their fathers were. We were going to them, and the children looked and wondered.

The sun came out, and a hot steam went up from the earth. The harness was rubbed dry by sheer force of arm, and horses were groomed until they shone. Chains were polished; brass wheel caps were brightened, and the ends of steel axles were made into shining discs. Wagons were rubbed with a greasy sock and covers drawn tight. The men shook the wrinkles out of their jackets, and with stick and brush made their buttons to shine.

Kits were adjusted. A whistle sounded. The Sergeant-Major said, "All correct, sir." The Colonel said, "Field Ambulance—column of route—by the right—quick march." We were on the road again. At the first turning the G.O.C. went by. "You are very well turned out this morning," he said. He knew it had been a wet night. We had had our reward. He said we were well turned out.

St. Omer was the rail-head. The wagons were loaded on flats, the horses in boxes, the men in others of the same, all in less than an hour. In two hours Calais was on the right, then Boulogne, and the route turned eastward. Passing north of Amiens, Canaples was reached; thence along a high ridge to Candas, and detrained. A short march south-eastward in the direction of Albert brought the ambulance to la Vicogne where it billeted in a filthy farm designed for 50 men only; the officers lay fourteen in a room. On September 6, a march of 10 miles through a forbidding country like the high prairie with small fields of poor grain on the slopes and the roads winding around the ridges, through Talmas, Rubempré, Hérissart, Contay, brought the ambulance to Vadencourt which lies in a pleasant valley, where it was comfortably entertained by No. 3 of the 1st Division. In the afternoon the unit reached Warloy-Baillon and took over a tented hospital "in a lovely garden with a long, low house on a terrace, filled with sick officers."

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[1] *Brit. Med. Jour.* Sept. 1, 1917. Ibid. Dec. 7, 1918. *Lancet,* June 30, 1917.

## CHAPTER VIII

### THE SOMME—VIMY RIDGE—PASSCHENDAELE

The battle of the Somme was the first heavy action in which all four Canadian divisions were engaged. The 3rd Division first came upon the scene at Flêtre on December 24, 1915, and the 4th Division at Reninghelst August 14, 1916. The 3rd Division was formed in France chiefly from units in the field surplus to the establishments already existing; the 4th Division was organized in England out of formations and drafts which had more recently come from Canada, only eight of the forty-four component parts being drawn from troops already in France. The battle opened for the Canadians on September 3, 1916, and lasted until November 28. The 1st, 2nd, and 3rd Divisions withdrew on October 16; the 4th Division went into the line on the following day, and completed its duty on the date named.

For the first time also all the mobile medical units were engaged. The Canadian front was so narrow—only 3,000 yards—that there was no room for the ambulances to operate as units; and the casualties were so heavy that no single unit could cope with them. Accordingly, all were pooled, and the corps became the administrative unit instead of the division. The casualties for the three divisions from September 3 to October 16, were: killed, 3,164; wounded, 13,400; missing, 2,859. The casualties of the 4th Division from October 17 to November 28 were: killed, 742; wounded, 3,059; missing, 510; making a total of 23,734 for the whole period.

The Canadians on September 3, came into a battle which had been in progress since the first of July. Albert was the centre of medical operations. The road from Vadencourt lay in a broad valley in a wide rolling country designed for a battle-field. As the leading division went up, taking over from the Australians, the region was already flooded with troops; the cavalry like flies clinging to the slopes. All the machinery of war was there: the heavy guns in a valley behind the town smashing shells against the heights; prisoners and wounded coming down; troops and transport passing and repassing in three lines on the road.

Albert itself was destroyed to the point of squalor; the church was gone, but the golden Virgin and the Child impended over the ruin. Many houses were standing but none had windows. The town was void of inhabitants. The main dressing station was established in a school-building that looked upon the *Place* to the east. It had long been used for a similar purpose. It was a large brick building of three commodious rooms with an open courtyard, all admirably suited for a dressing station. The Ancre flowed behind in a swift stream enclosed by walls. Adjoining on the right was a fine house with an entrance from the street through an archway into an inner paved court-yard. In the centre was a chestnut tree having a 40-foot spread of branch and leaf. Both sides of the court were flanked with kitchens, offices, and storerooms; at the back was a five-foot wall with steps ascending to a raised garden which gave private access to the dressing station. The house must have belonged to a rich man of taste, and it yet contained a few pieces of well carved oak too heavy to be moved away. The officers of the combined ambulances occupied this place as a mess-room, and for billets entered any of the more intact houses. The town was under slow fire, one

heavy shell every four minutes; but they were gas shells, and 60 casualties came in the first six hours.

The terrain allotted to the Corps was for the purpose of administration divided into three areas: a resting zone occupied by the division in rest with headquarters at Canaples, an assembly zone for the division in immediate reserve with headquarters at Rubempré, a fighting zone held by the division in the line based on Albert. When Albert became untenable headquarters were removed underground to Usna Hill and Tara Hill. The three divisions occupied these zones in turn from September 4 until October 16. The operations of the 4th Division after that date were almost indentical. All three divisions were in the line twice; but certain definite stations existed in the area throughout the whole period, and as the divisions moved in and out these stations were taken over by corresponding ambulances.

The main dressing station for stretcher cases was in Albert; it was administered by the medical director of the division in the line; the main dressing station for walking cases was at the Brickfields; and at North Chimneys was a collecting centre for the sick, both under his control. The medical director of the division in immediate reserve administered the corps stations at Vadencourt for sick and slightly wounded, and the officers' hospital at Warloy. The corps rest station at le Val-de-Maison, which was really a reinforcement camp, was in charge of the medical director of the division in rest. Advanced dressing stations were opened as required by the medical directors of the divisions in the line, and the wounded were evacuated to Albert or the Brickfields.

This complete separation of walking cases from stretcher cases was a new procedure in the clearing of a field. Strange as it may seem, a field could be cleared more

quickly if all walking cases were converted into stretcher cases. The success of this absolute separation gave rise to the paradox: take care of the walking cases and the stretcher cases will take care of themselves.

The arrangements were not quite so rigid as they are made to appear, for the officer directing the medical operations of the Corps ambulances had at his disposal the bearers and transport of the reserve or resting divisions for purposes of evacuation. The transport of those ambulances was frequently so employed. The director in charge of evacuation in reality had at his disposal at least 84 motor-ambulances, 36 horsed ambulances, and as many motor lorries and service wagons as were available. When not so employed this transport was parked at Warloy or near Albert.

The three ambulances of the division in the line had therefore three separate duties, to clear the field, to manage the main dressing station at Albert, and the ones at the Brickfields and North Chimneys. To perform these duties the ambulances were resolved into their component parts of bearers and tent personnel. The three sets of bearers were then combined and placed under the officer commanding one ambulance, who had charge of evacuation. The officer commanding the other two ambulances had charge of all the tent divisions at the two main dressing stations. One inevitable effect of this arrangement was to bring bearers under the immediate command of an officer who was strange to them, and left them free to allege that they were pushed forward into positions from which the personnel familiar to him was spared.

In the reserve area the director had under his control six ambulances working two collecting stations at Warloy and Vadencourt, one corps rest station, one collecting station for lightly wounded, and a unit for the service of

troops in the area. The rest station was also at Vadencourt for all sick and for those suffering from minor wounds which did not demand evacuation. There was in addition an ambulance at Hérissart for troops passing through. The remainder of the units, less those in the line, were in the rest area, although their bearers and transport were usually at the front.

Evacuation of walking cases from the Brickfields was by empty supply and ammunition trains or omnibuses to the casualty clearing station at Vecquemont. The stretcher cases were removed by No. 26 Motor Ambulance Convoy to No. 3 and 44 British Casualty Clearing Stations at Puchevillers, or to Contay. At Warloy was a British operating centre to which serious cases were sent for immediate relief.

Of the forward area an officer supplies a useful note: At two o'clock I went up on a four-horsed ambulance to the advanced dressing station at Contalmaison, following the Bengal Lancers at a gallop across the Square. From Albert the road ascends to Tara Hill, where headquarters are underground; then falls down to a valley. A road leads to the right towards Contalmaison and ascends a hill from which Mametz Wood is seen a mile towards the right front, Pozières a mile to the left, and Thiepval a mile further off.

The road through la Boisselle to Contalmaison leads through the worst of the battle-field. Not a trace of any village remains except the stocks of trees. Craters and shell-holes are indistinguishable from cellars. The area is full of soldiers living in holes, cooking in the open, mending roads, stringing wires, or moving in small bodies to the front. The road is sheltered by the ridge. The guns to the rear have no cover, but they are smeared with chalk, white as the earth. They were all going—a pair

of 12 inch from the railway cutting; two batteries of 9.2 on the left; the howitzers and field guns sparkling in the half rain; the shells over-head in all various tones from singing to a scream. The horses never wince. The place looks like a heavy sea—a long broken swell of grey, the tops of the ridges edged with the white lines of trenches.

This was September 14, 1916; the following day that stage of the battle began, which drove the enemy out of Courcelette, Martinpuich, and Flers, and left them encircled in Thiepval. General Turner had warned the service for 3,000 casualties each day; he was not far wrong in his estimate. In the first 30 hours, 3,250 casualties were cleared, but there was at the moment no account of the dead.

An officer supplies another note: At 5 p.m., I was up along the sunken road through the valley which lies between Pozières and Contalmaison. The guns were on the right as I entered the valley; then they were on both sides. The barrage began; the horse artillery was going forward; two regiments of cavalry were massed in a fold of the ground; mounted a crest and then descended. The heavy guns were now a mile to the rear; passed through the field guns, and climbed another slope well in front of Pozières. Here I found the dressing station which had been still further advanced during the day. The German shells were bursting on the ridge two hundred yards in front. The noise was such that no voice could be heard. Colonel Campbell who was in charge of the station walked a little way on my return to the rear, where it was quieter to convey, and receive, instructions. He was unperturbed as usual, and even stopped to free a horse that was in trouble. The evening was clear and yellow, the west streaked with crimson, the east gloomy with clouds. I lost my way among the guns, bewildered by the flame and

stifled by the smoke; but the moon rose. The battle is proceeding.

On the following morning Lieut.-Colonel R. P. Campbell was killed at this spot. He was struck in the breast by a piece of shrapnel, and lived only twenty minutes. He had been told to clear the field, and he did what he was told. His soldierly conception of duty doomed him from the first. His men spoke of him as " the dear little Colonel." and they gave him the tribute of tears. For a time the body was lost in the upheaval of earth. In a quiet moment it was uncovered and brought down in one of his own ambulances. He was buried in Albert on September 17. The field ambulance service was a dangerous one.

Meantime the main dressing station at Albert was in full operation. Twelve surgeons worked by day and twelve by night at twelve tables. The supply of cases was never exhausted. The supply of dressings never failed. At the height of the action the officer in command worked for 72 hours without sleep, with that steadfast Yorkshire courage which made him the admiration of men of a more excitable race. After three days and three nights he lay down upon a stretcher amidst the débris of war. As he was almost the only person in the army, except the Commander-in-Chief, who wore whiskers, he was not recognized by the orderlies, and in his deep sleep narrowly escaped evacuation with the other lying cases.

By mid October 1916 the main operations on the Somme were at an end, and the withdrawal of the Canadians began. It was not exactly a retreat; it was the end of a containing operation that succeeded, although after a hundred days of incessant fighting the ground gained could be traversed in a morning's walk. In the last five weeks autumn had come, and the heavy rains commenced, bringing the old familiar mud. The route lay northward, and

was covered on foot, through Contay, Hérissart, le Val-de-maison, over long ridges between bleak, brown fields; through Beauval, off the Somme heights on to a mellow plain with clean solid hamlets; through Neuvillette into an upland country with pleasant streams and woods, across the Hem at Authie over a bridge and foaming water that looked auspicious for trout. The route now lay northwest to Magnicourt-sur-Canche, traversing the head-waters of the rivers that fall into the western ocean; then over the Scarpe and the Lawe which flow contrary towards Arras and the east. At Bajus the road turned eastward through a hilly desolate land until Barlin was reached. West of Houdain from a hill-top 110 metres high two slag-heaps were seen on the eastern horizon, marking the Loos-Liévin line. A short march brought the ambulances to a new front once more, and there they remained during the winter of 1916-17, until February, when they took up positions at the foot of Vimy ridge.

### Vimy Ridge

In conception, preparation, co-operation of all arms, swift and complete success, the battle of Vimy Ridge is one of the nicest feats in military history. The assault began at half past five in the morning. By dark the enemy was in retreat from the centre, the battle won, and the field cleared of all wounded including prisoners. Evacuation had been going on all day, and when night fell only a few hundred patients remained at the advanced dressing station.

This happy result was not an affair of chance. There had been ample time for preparation; the terrain was open; the front was definite and extended. This was the second large occasion on which the Canadian Corps was at its maximum strength of four divisions. Every division was

full and every arm complete. All twelve ambulances had room for initiative, and the degree of combination was just enough to achieve a conjoined effect. The following table shows the disposition of the Field Ambulances on the morning of the battle, April 9, 1917.

| | Headquarters | Officer Commanding |
|---|---|---|
| No. 1 | les Quatre Vents | Lieut.-Colonel R. P. Wright. |
| " 2 | Ecoivres | Major J. J. Fraser. |
| " 3 | Estrée-Cauchie | Major A. S. Donaldson. |
| " 4 | les Quatre Vents | Lieut.-Colonel W. Webster. |
| " 5 | Cambligneul | Lieut.-Colonel C. F. McGuffin. |
| " 6 | Fresnicourt | Lieut.-Colonel T. J. F. Murphy. |
| " 8 | les Quatre Vents | Major J. N. Gunn. |
| " 9 | Villers-au-Bois | Major A. T. Bazin. |
| " 10 | les Quatre Vents | Lieut.-Colonel G. R. Philp. |
| " 11 | la Haie | Lieut.-Colonel J. D. McQueen. |
| " 12 | la Haie | Lieut.-Colonel P. G. Bell. |
| " 13 | la Haie | Lieut.-Colonel A. L. C. Gilday. |

The Assistant Directors of Medical Services were: 1st Division, Colonel F. S. L. Ford, with headquarters at Ecoivres; 2nd Division, Colonel H. M. Jacques, at Chateau d'Acq; 3rd Division, Colonel A. E. Snell, at Villers-au-Bois; 4th Division, Colonel H. A. Chisholm, at Chateau-de-la-Haie. The Director was Colonel A. E. Ross, with headquarters at Camblain l'Abbé; his assistant, Major G. H. R. Gibson.

During the winter the ambulances had been scattered over a wide area, carrying on the routine of work; but about February 10, a movement of forward concentration began. The road for twelve miles was flowing with troops and transport, one, two, and three columns side by side; a string of lorries going to Paris with coal; English battalions, the chains and hubs of their transport shining in the sun; a mile-long train of 12-inch guns, with their accessories of girders, plates, and rails; ambulances making as brave a display as any.

The first business of the medical service on coming into a new line is to examine the front. At Vimy there was no defined front,—merely a series of open saps running forward from the main position, from which one could look out upon a row of craters in a sea of rusted wire, into the German trenches which were on the forward slope of the ridge; the ridge itself, a black low line on the eastern horizon.

The next business is to construct an advanced dressing station, relay posts, accommodation for bearers, and regimental aid posts; to examine routes for evacuation, and invoke the aid of other services to build roads. The ambulances with the more professional advice of a sapper corporal repaired or constructed their own posts. Here the rock was chalk, and easily worked.

As an example of technique and particularity in detail, a portion of one report and specification will serve for all divisions. It also suggests the progress of medical arrangements as on March 18. Such a report is made to the assistant director by a medical officer detailed for the purpose. It then goes through the Assistant Adjutant and Quartermaster-General with similar reports from other arms and services upon their own subjects; and finally the General Officer Commanding will have all matters under his hand before the action begins. The present report concerns one division only, and deals with the advanced dressing station, field ambulance relay posts, accommodation for bearers, and regimental aid posts. The accompanying map will indicate how complicated the area was:

Map, *Thélus Sector*. Secret No. 64. This map bears all locations, and the points have been checked by Os. Comd'g Fld. Coys. C.E., now operating in the area, so that the plans of both services will correspond.

Advanced Dressing Station.—Aux Rietz, Map location A.8,c.25.30. East side of Aux Rietz road, south of

Territorial trench. A series of dug-outs with six main entrances, connected by interior ways and covered passages.

Certain recommendations are made: (*a*) That all entrances be cleared of fallen débris, widened, revetted, and laid with double row of trench floors. This work is now in hand. (*b*) That the spur from the adjacent tramline be cleared, and ample turning place be provided across the road for motor ambulances. This work is now in hand. (*c*) That dressing room space be doubled by erection of a "beehive," which will be an extension north of the present one, and will extend to Territorial trench. Marked B on plan. This work has not yet been authorized. Accommodation.—Racks 26. Bunks 36. Space for 10. Total 72. Deduct personnel 25. Remainder for patients 47.

Field Ambulance Relay Posts.—1. On Parallel 8, east side, and immediately north of Denis le Rock. Map location A.3.d.35.20, commonly called the Pill Works. There are two entrances which give into a deep chamber bunked for 28 men. Completed.

2. Known as "Pointe Centrale," on Rhine, west side, 20 paces north of Territorial. Map location A.9.c.1.5. The main entrance is on Rhine and there are two emergency exits upon a blind trench at the rear. The size of the chamber will be 30 feet by 9 feet. It will be finished in six days. A party of 26 men from a Field Ambulance is at work.

Accommodation for Ambulance Bearers.—1. Cellar in Neuville St. Vaast, No. 1. Map location A.3.d.00.05 on the east side of a small unmarked trench which runs south from Denis le Rock, known as "water trench." This cellar is lined with steel and is bunked for 8 men and has one entrance. Completed.

2. Dug-out on Abri Bosche. This trench begins on Parallel 8 at a point 135 paces from Denis le Rock and extends west and north. The dug-out is to be found 150 paces from Parallel 8. Map location A.3.d.05.40. It is steel lined and is bunked for 12 men. The trench is "blind" and by disuse is fallen into decay. Completed.

Regimental Aid Posts.—1. Combow and Denis le Rock. Map location A.3.d.8.7. Entrance and exit by slopes on Combow, also entrance and exit by slopes in Denis le Rock—four openings in all. On each side slopes descend 20 feet to central chamber which is now being

excavated. A party about 100 strong supplied by field ambulances is at work on this post and should complete in six days.

2. Between Territorial and Maitland, 80 paces from Mill. Map location A.10.a.35.35. There is one entrance from Territorial and one from Maitland. The slopes and passage are completed. The passage measures 50 by 9 feet and has a recess 6 by 9 feet. A central chamber is in process of excavation. All will be completed in 7 days. It is proposed to connect this post by a passage with Zivy Cave. The accommodation will therefore be unlimited.

3. At southeast angle of Territorial and Bessan, with one entrance from each trench. Map location A.9.b.85.20. The chamber is 35 by 9 feet. It will contain 12 racks. It is supported by steel beams on posts. The walls are rock. Racks are being placed and all will be completed in two days.

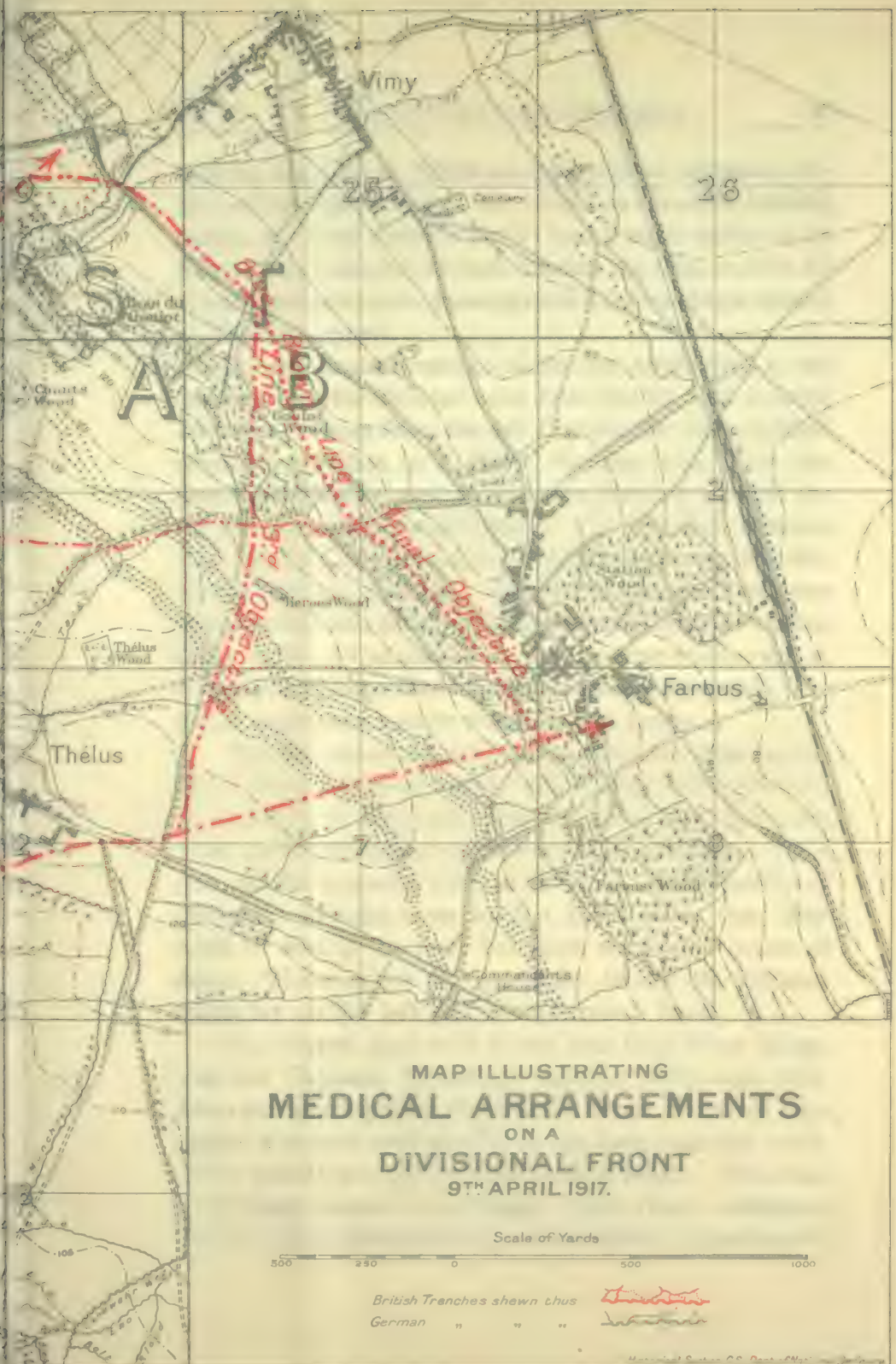
GENERAL.—STRETCHER CARS.—Only three stretcher cars of 40*cm* type are available, and none of the 60*cm* type. The divisional front will require about 12 of each.

TRAMWAYS.—It is yet too early to arrange details of the plan for evacuating wounded by tramway as the lines are not yet completed. The northern area can be cleared from the front by tram along de la Fourche trench to La Portique, where transfer can be made to the 60*cm* line for Aux Rietz. In the remaining part of the area the line is being salved from Glasgow Dump to Vistula railhead; from Elbe to Bessan railhead; from Elbe to Claudot railhead. Track is being relaid from Vistula railhead to Territorial along Vistula, where it will join the 60*cm* system. Mule tracks are being laid out, but the advisability of these methods should be considered when they are further advanced.

At the battle of Vimy Ridge certain specific duties were assigned to the various field ambulances. No. 2 was clearing the field, and had an advanced dressing station at Aux Rietz and at Ariane. No. 3 had a similar station at Maison Blanche. No. 4 was clearing the field, and had the central advanced dressing station at Aux Rietz. No. 8 was clearing the field. No. 9 had a main dressing station for

25
23
1
2
la Targette
aux Rietz
A.D.S.
GLASGO
CRAUDOT
R.A.P.
R.A.R.
PRISON
Neuville-St.-Vaast

Black Line
1st Objective
Objective
Red Line
2nd
Tilloloy
Long Elm




MAP ILLUSTRATING

# MEDICAL ARRANGEMENTS

ON A

## DIVISIONAL FRONT

9TH APRIL 1917.

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walking wounded at Villers-au-Bois, and an advanced station at Neuville St. Vaast. No. 10 had an advanced dressing station at "Pont Street". No. 11 had a main station at la Haie. No. 12 and No. 13 were clearing the field, and No. 13 in addition had a main dressing station for walking wounded at Hersin-Coupigny.

A corps main dressing station was established at les Quatre Vents for stretcher cases from the 1st, 2nd, and 3rd Divisions. Those from the 4th Division for topographical reasons were taken to la Haie. Walking cases from the first three divisions went to Villers-au-Bois; those from the 4th Division to Hersin-Coupigny. For the three divisions corps medical arrangements governed; those for the 4th, were divisional. The corps station at les Quatre Vents was staffed by the tent personnel of ambulances from the various divisions. No. 1 Canadian Casualty Clearing Station was at Aubigny, and there were four others within close reach. The motor ambulance convoy was based on Bruay.

The clearing of the field to the advanced dressing stations was extremely rapid. More than 2,000 prisoners assisted, but as they rarely made a second trip, there was delay in returning the stretchers to the aid posts. By 4 p.m., all the wounded were off the field. This rapidity of movement brought cases to Aux Rietz faster than they could be sent to the rear; but there were other causes of delay. These causes did not apply to the 4th Division which lay on the left and cleared from a flank.

The nearest good road to the rear from Vimy Ridge, was the Chaussée Brunehaut running north-west from Arras and passing through Mont St. Eloy. To avoid congestion a disused road parallel to the main road and north of the towers was put in some kind of repair. This road gave direct access to les Quatre Vents from *Ambulance Corner*, a name applied to its junction with la Targette road,

and the terminal of all tramways from Aux Rietz and from the extreme front. The arrangement was perfect, but two events happened to impair it. The sudden success of the infantry attack demanded an equally sudden advance of artillery in further support. This irruption of guns and heavy transport into the area destroyed the repaired road and impeded the tramways at Ambulance Corner. For two hours evacuation was blocked. The motor convoys were in command of the Army director, and the Corps deputy director with the one convoy assigned to him was unable to meet the unexpected situation. A motor-ambulance required five hours for the return journey from the advanced to the main dressing station at les Quatre Vents. Small convoys of eight and ten cars were borrowed from those in operation further to the rear, and from the 5th (British) Division. Every car in the Corps was pressed into the service for a continual period of 20 hours duty. To add to the distress heavy snow followed a day of rain, and even good roads became impassable.

The Canadian medical service never broke down; it was never in any danger of breaking down. From Ypres to Amiens; from Amiens to the Rhine its record of achievement was complete. When it appeared to fail in any one particular the apparent failure was due to the excess of excellence in some other quarter, or to defects over which it had no control. The field of Vimy was cleared before night fell. At dark a Canadian general officer passed the advanced dressing station at Aux Rietz. Willing to find fault, now that the battle was over and won, he demanded to know why some hundreds of wounded were lying on the road. He was offered the alternative: whether he preferred that the wounded awaiting convoy should be resting on stretchers, covered with blankets, protected by serum, comforted with morphine, nourished

with food and drink, their wounds dressed; or that they should be lying unattended on the cold field that snowy night. He was recommended to seek further back for the cause of delay.

Certainly, two roads, la Targette and Brunehaut were declared impassable on quite insufficient evidence. In any case, a casual telephone message from the front at 10 p.m., that these roads were available, quickly brought 80 cars to the rescue. But this was an affair of the Corps and of the Army,—not of the Divisions. The medical director of the Canadian Corps might have insisted more firmly that he have ample motor convoy under his own control to clear direct from the advanced dressing station at Aux Rietz; or, alternatively, he should have been allowed to move his main dressing station forward from les Quatre Vents to Mont St. Eloy. This judgement, it must be borne in mind, is merely one of those deliverances easy after the event. Mont St. Eloy, Bois de Bray, Ecoivres, as possible sites, were much crowded with other troops and were under continuous enemy observation. In the event of failure, or even of partial success which left the enemy guns in position, all these areas would have been untenable. Once the battle was joined and the issue probable a main dressing station should have been opened forward at Mont St. Eloy.

In spite of these difficulties all the advanced dressing stations were cleared by 2 a.m. on the morning following the battle; and in those 22 hours 5,976 cases were either safe in the casualty clearing stations or warmly housed at les Quatre Vents. During the three days 9th-11th April, 1917, the casualties, wounded but exclusive of killed, were 7,350; the enemy casualties cared for were 706. The stretcher cases were 4,265 and the walking cases 3,791. The

usual ratio of stretcher cases to walking cases is as one to three; in this battle the heavily wounded were the more numerous.

After Vimy and before Passchendaele the only major operation which required a change in medical arrangements centred about Hill 70 on August 15, and 16, 1917. The battle of Arleux was fought on April 28 and 29, and the third battle of the Scarpe including the capture of Fresnoy on May 3 and 4; but these require no especial mention as the medical services operated by the customary method. At Hill 70 three divisions were engaged, the 1st, 2nd, and 4th; and the medical arrangements were purely divisional. The total number of wounded was 84 officers and 2,581 other ranks; and of prisoners of war 8 officers and 243 other ranks were relieved.

For the three divisions the main dressing stations were at Noeux-les-Mines, Fosse 10, and "Toronto Junction" respectively. Evacuation was by trench tramways, except on the 1st Divisional front where the rails were early destroyed by shell fire. On other fronts they were a complete success; trains carrying 42 wounded were dispatched continuously. This action was one of the few in which unreserved praise can be awarded to the weather; the warmth and dryness and the ample transport made the task of evacuation easy; the suffering of the wounded was kept within control. The assault began at 4.25 a.m.; by four in the afternoon the aid-posts were empty and the advanced stations reported clear; by six o'clock the evacuation was 66 officers and 2,055 other ranks. The area was not entirely devoid of inhabitants, and arrangements were made for civilian casualties in cellars and tents where 1,345 cases could be entertained. Until October there was comparative ease for the medical service.

## Passchendaele

The Canadian Corps took over the battle line in front of Passchendaele at 10 a.m. October 18, 1917, and delivered the first attack on October 26. By this time a change in the command of seven of the field ambulances had taken place. The new commanding officers were Lieut.-Colonels G. J. Boyce, No. 1; J. J. Fraser, No. 2; A. S. Donaldson, No. 3; C. F. McGuffin, No. 4; D. P. Kappele, No. 5; E. R. Selby, No. 8; C. W. Vipond, No. 9; T. M. Leask, No. 10; and Major H. H. Moshier, No. 11.

The operation order for the medical service in the battle of Passchendaele opens with an ominous note, from the medical director of the Corps, which reads: "It is expected that under the prevailing conditions, the evacuation of the wounded will be a matter of extreme difficulty. Owing to the almost complete absence of shelter of any kind, it will be impossible to keep cases under cover; and in consequence the wounded will suffer hardship if the weather is bad. The evacuation from the forward area can only be conducted during the day. At night stretcher parties lose themselves, as there are no land marks. Added to this, the deep soft mud, the number of shell holes, and the absence of roads, render the work of carrying stretchers extremely arduous. During the present fighting, it required six men to a stretcher, six hours, to carry from the regimental aid posts to the nearest point where wheeled transport was available. These men were then completely worn out. It is therefore estimated that 400 stretcher bearers per brigade will have to be detailed—in addition to the ordinary medical personnel."

This order is dated 21st October 1917, and the gloomy prediction was amply fulfilled. The casualties were: killed 3,130; wounded 12,076; missing 947. In this battle

all four Canadian divisions were engaged; the 1st and 2nd each made one tour in the line; the 3rd and 4th were engaged twice. The last tour of the 3rd, however, was only for a few days, and was merely holding a position previous to handing over to a new corps. The divisions were in the line for each tour, eight to thirteen days, and then went out of the line to the rest area. The medical arrangements were partly corps and partly divisional. The divisional medical arrangements concerned the advanced dressing stations, clearing the front, and evacuating sick to the corps dressing stations. There were two divisions in the line, at one time. For the first tour the 3rd, and 4th were in the line, with the 4th on the right and the 3rd on the left. These divisions had their own advanced dressing stations, which were moved according to the need.

The main dressing stations were operated under corps arrangements, and were disposed as follows: Vlamertinghe Mill for stretcher cases; Ypres Prison for walking wounded; collecting post for sick at Red Farm opposite Vlamertinghe; Brandhoek for gassed cases. One casualty clearing station was at Nine Elms, operated by the Australians, and two at Godewaersvelde. The wounded were evacuated from the front by hand, by horsed ambulances, wheeled stretchers, and light tramway, to Frost House, which was the transfer point from the 4th Division on the right. The transfer point of the 3rd Division was Bridge Farm. From these two transfer points wounded were taken back by light railway or ambulance cars to the main dressing station at Vlamertinghe. The walking cases were sent back by lorries or found their way to the prison at Ypres.

The battle had been in progress for some weeks before the Canadians arrived, and disaster dogged every corps involved. The Canadian commander refused to engage until he should have taken measures which, if they would not

ensure success, would at least render disaster improbable. One of these measures was to make certain that his wounded could be evacuated. Nothing so strengthens morale as the certainty of such relief. For a whole week his sappers were engaged in building plank roads, pushing up light tramways, and preparing those movable pathways known as "bath-mats."

For the Canadians the battle opened on October 26, in heavy rain. The first walking wounded arrived at Somme Redoubt, where wheeled transport was available, at 6 a.m. The stretcher cases began to arrive an hour later. By 2 p.m. the aid post on the right sector was clear, and by 6 p.m. all aid posts and advanced dressing stations on the whole front of the right sector were free of wounded. On the left sector infantry bearers rendered great assistance.

From Somme Redoubt the further evacuation was made easy by wheeled stretchers over the plank road and by the tramway that worked alongside, and carried patients as far as Culloden Junction. Three broad gauge trains conveyed the walking wounded from Ypres Prison to Godewaersvelde, and another train from Vlamertinghe cleared those cases which had come down by light railway from Culloden and Bridge Farm. By this means ambulance cars were kept off the roads, and even the motor convoy was much relieved. The whole front was cleared in 12 hours. The Chaplain Services, the Red Cross, and the Young Men's Christian Association combined their efforts, and at arranged places provided hot drinks and food, stoves, fuel, clothing, and cigarettes. The supply of blankets was unfailing.

The action was resumed on October 30, and the medical arrangements were nearly identical. The weather was fine but very cold. Later in the day rain fell, but by that

time the wounded were cleared. The first cases arrived at 6 a.m.; the whole front was free of wounded by four in the evening.

In the final actions, November 6 and 10, evacuation was easier, as trench mats were in more general use. The walking wounded began to arrive at 7 a.m.; by 3 p.m. both sectors were clear; by 5 p.m. 800 wounded had passed through Ypres Prison, and 350 through Vlamertinghe, most of them stretcher cases. In this action Captain R. A. Ireland was killed; Captain K. A. McCuish, who took over, was wounded at once, and died next day.

# CHAPTER IX

## THE SURGERY OF THE FRONT

The number of wounded in the Canadian army passing through medical formations was 144,606. The number of troops overseas was 418,052. The ratio of wounded was, therefore, 34·59 per cent, that is, more than one person was wounded out of three who served. Of these wounded, 16,459 died, that is 11·4 per cent. Nearly nine out of ten recovered in some degree from their wounds. The extent to which modern surgery, civil and military, triumphed is contained in that statement.

For comparison, exclusive of overseas troops, the British wounded were 1,583,180. The enlistments were 4,970,902. The percentage of wounded in all areas was therefore 31.84. Amongst those troops employed in France the percentage of wounded was 37.56. The total British battle casualties in France, including killed, died of disease, wounded, missing, and prisoners, were 55.99 per cent; that is, of every nine men five became casualties, of whom more than three in nine were wounded.

The surgeon had no unfair advantage. From his point of view never was a filthier war waged. From time immemorial Flanders has been the battle-field of Europe, and in the intervals of peace the land was most carefully farmed. The inhabitants gather up all excreta, their own included,



83635—8½

like crumbs from a rich man's table; and this by-product is an important element in making up the economic profit and loss account of the individual. The soil is deeply infected. With the disturbance of the ground by trenches, graves, and shells, the infection was general and virulent. Tetanus came into its own; but not for long.

Early in 1915 the menace was grave. The proper serum was used. The danger passed. The supply became deficient and the menace recurred. With ample supplies the infection was brought under complete control again. When the fighting was at its worst, and even one base hospital was receiving five hundred wounded every day, a week would pass without more than one case of tetanus being discovered. The surgeons of this hospital—No. 3 Canadian General—observed from their experience that 1,500 units was the proper average preventive dose of serum; that the apparent severity of the wound was not a trustworthy indication of the amount to be used; that a trivial abrasion on the heel or the impairment of skin in "trench foot" allowed an infection as grave as might be expected in a heavy wound.

The commandant of this hospital also observed that patients might be saved after definite signs of tetanus had disclosed themselves, as in cases of cephalic involvement and primary spasms of muscle. But it was necessary to administer the serum in doses that seemed incredibly large. Several hundred thousand units must be injected into the veins, into the thorax, into the sheath of the spinal cord, and under the skin. By these measures more than half the cases were saved, provided an early diagnosis had been made. This led in turn to the manufacture of a serum in a highly concentrated form, and to every such suggestion the British medical director gave instant acceptance. In supplying this serum Dr. J. G. Fitzgerald of the

Connaught Laboratories in Toronto performed an important service.

The surgeons on the lines were continually amazed at the fidelity of the regimental medical and field ambulance service to the established procedure, even in circumstances of difficulty and danger. Every patient carried on the card attached to his clothing a record of inoculation and the amount received. In addition, he usually bore a similar sign on the back of his left wrist, made with an indelible pencil. And yet, infection from the needle at the point of entrance "practically never occurred;" the boiled needle and the touch of iodine were sufficient guarantee.

The subject of local treatment for wound infection aroused interest from the first. Two schools of thought and of treatment quickly arose. The one placed most reliance upon germicides; the other advocated physiological measures. In the end both were proved to be wrong. The protagonist of the physiological method was, as one might expect, he not being a surgeon, Sir Almroth E. Wright, head of the bacteriological department of the Medical Research Committee. He established a laboratory at Boulogne, and with the assistance of pupils trained in his own school began a laborious investigation. His method in short was based upon a free flow of lymph into the wound to be encouraged by hypertonic salt solution. In practice the method developed into packing septic wounds with common salt to which sodium citrate might be added. The continuous irrigation of wounds with saline solutions was given a thorough trial, and excellent results were obtained in the laboratory and in the hospitals at the base,—as excellent as the results obtained by the Carrel-Dakin method in Compiègne, but both equally limited in the field or on the lines.

Those who still believed in antiseptics were led to a study of hypochlorites. Lorrain Smith and his colleagues in Edinburgh devised a preparation of bleaching powder and calcium borate, which came to be known as "eusol," and was well liked. Dr. Dakin arrived at a similar result, and employed the solution by the method which bears his name in conjunction with that of this fellow-worker Dr. Carrel, a method which worked admirably when it worked at all.

But the disinfectant which excited most interest was known as "flavine." Forming one of the "aniline dye" series its properties are different from others in the group. It was first used by Ehrlich in the treatment of trypanosomiasis, and has since been the subject of intense study. Its claim as a germicide rests upon wide grounds, namely, that it destroys bacteria and does not injure tissue cells, that is, does not impair the phagocytic function of the leucocytes; and that it retains its activity in presence of albumins. But flavine went the way of all solutions and germicides and other devices of the laboratory, when it was discovered that the only effective method of dealing with grossly infected wounds is to cut away the dead and dying tissues.

For the treatment of a wound there is no established ritual. A medical officer must do the best he can in the circumstances in which he finds himself. In the long period of peace preceding this war there was a discovery of surgical principles and a development of practice such as the world has never witnessed; but it was a surgery of peace and not a surgery of war. From the continual observance of the behaviour of wounds which they themselves had made with their own chosen instruments upon tissues selected and prepared in advance, surgeons were by the contrast astonished at the rough wounds of war; and yet

by that very training they had acquired a flexibility of mind which left them quick to conform with the new experience.

The experience of the officer at the front was limited to his own field, and his methods lacked the nicety of the base. To him all wounds were infected, even the piercing wound caused by a direct rifle bullet. Asepsis seemed to him like an old tradition acquired in civil life. Antiseptics at first were used freely, and somewhat to the end. They were of most value in wounds that would have healed without them. Of all these agencies iodine was the best liked. It was in compact form, and the bearers could see the result of the application. It prevented much infection where infection had not already taken place. The solution of hypochloride of lime was also a favourite. When it was poured into an open wound bubbles of gas could be seen arising, and gave off the wholesome cleanly smell of diluted chlorine. The solution of salt was less spectacular; but it seemed to produce a flow of serum, and the inhibitory action of salt was well known. "Edinburgh University solution" was abbreviated to the familiar "eusol." It was an interesting word and the remedy was easily prepared,—a pinch of boracic acid and a pinch of chloride of lime from the water-cart put into a beer-bottle filled with warm water. At the front a great ingenuity was achieved. One medical officer even contrived a transfusion apparatus with some tubes and nozzles and tin boxes taken from the panniers, all carried in a haversack. After he had employed it upon a desperately wounded colonel in a trench his apparatus excited some interest.

Careful observers thought well of "flavine," a coal-tar product allied with those stains employed for identifying bacteria. These dyes certainly destroyed the bacteria on a glass slide; they might well be expected to destroy them

in a wound. In any case, flavine was painless to the living tissues, which is more than can be said of many other antiseptics.

Operators who by their training must close any wound with sutures and yet were prevented by their knowledge and conscience from closing it, employed an emulsion of bismuth, iodoform, and paraffin. They described the practice as a delayed primary suture. In time the discovery was made that there was little wisdom in closing a wound at the front unless one was sure that no foreign body, like a piece of iron or a shred of clothing, remained in the tissues. This certainty could only be acquired in a casualty clearing station or a base hospital by the employment of the electrical machinery with which those places are equipped.

The operators in the aid-posts and field ambulances in the end contented themselves by evacuating the cases with all possible dispatch. They strengthened the patient with food and warmth; they eased his pain with morphine; they fixed fractures as well as they could; they protected him with serum. In respect of the wound itself they cleaned the field, cut away the dead and dying tissue, checked bleeding, and packed the cavity with some light material soaked in a harmless fluid. All efforts to close the wound were abandoned, as closure at the front invariably meant sepsis at the base. Even drainage tubes were unused, since a blocked drain is worse than no drain at all. Indeed a drain may work both ways.

At the base the wound was searched. There were laboratories in which the cause of the sepsis could be discovered, and the appropriate deterrent applied. When the sepsis was controlled, the wound healthy and granulated, that was the time for closing it; and the delayed primary suture was justified.

The hardest lesson the medical service had to learn was, that a method of treatment which yielded excellent results in one set of conditions might be a menace where those conditions did not prevail, and that theoretical perfection could easily turn to disaster. The most logically perfect method of dealing with an infected wound is to keep the deeper parts constantly flooded with an antiseptic solution. Such a method had long since been devised by Alexis Carrel as a result of his researches in the Rockefeller Institute. He introduced small rubber tubes, closed at the inner end and finely pierced along the whole length. Fluid was forced in by gravity; it acted as a spray and flushed back out of the dressing, carrying the septic material with it. The fluid was a solution of hypochloride of lime, suggested by Dakin; and this constant irrigation came to be known as the Carrel-Dakin method of treatment.

A special hospital was established at Compiègne, and Carrel, himself a Frenchman, was placed in charge. The results were excellent; the conditions were perfect. This French base hospital was near the field. Appropriate cases were brought direct in ambulances from the battle. They were treated continuously to a conclusion without being moved. There was no nicer method of treatment; but it was not generally applicable for English needs, and the British hospital system could not be completely changed to meet the demands of one special form of treatment.

Crowded against the coast, the British army had not an area sufficient to contain the required hospitals, and there was always the remote fear that even Calais and Boulogne might have to be evacuated. For the wounded there was therefore a long line from field ambulance, to casualty clearing station, through the base in France to the base in England. In ambulance trains and hospital ships it was quite impossible to observe the meticulous routine

by which alone a constant irrigation was maintained, and as a result the cases would arrive with foul wounds packed with tubes which were filled with pus. Even at the advanced base in a general hospital there could not be enough nurses devoted to so exacting a system. What was a blessing to a limited area in France was a menace to the English, and the method was abandoned except in peculiar and special circumstances. American experience was not dissimilar. Where evacuation was an element, the procedure was "practically impossible."[1]

In the treatment of septic knee joints there was at first a distinct divergence of practice between the Canadian and English surgeons. The Canadian practice was influenced largely by the teaching and results of that American surgeon, John B. Murphy, who had long ago protested against drainage, and pled for the attempt to secure increased resisting power by the injection of an antiseptic irritant such as formalin. Early in the war every patient suffering from a septic knee joint came down from the front with large drainage tubes, and nearly all of those cases went on to amputation. In the end the newer practice prevailed. The joint was opened; the infected tissues were cut away; foreign bodies were removed; an antiseptic irritant was introduced, and the joint was closed without drainage, following the analogy of operation within the peritoneum. A Belgian surgeon went still further, and compelled his patients to walk about, and by that means force out the pus through small openings left in the skin. Splints were not employed unless the condition was complicated by fractures. American experience again was identical. Drained knee joints arrived badly infected, even where Carrel tubes were employed; the results were discouraging, and amputation was required.[2]

In all wars and in the early days of this war a fractured femur was the most desperate condition a medical officer had to face; there was a chance of doing something and yet the hope was so small. As a result of the experience gained, a fracture of the femur, even when the bones protrude, may now be regarded with a certain degree of complacency. The history of the treatment of fractures in this war is short and simple. At first the results by traditional methods in casual hospitals were deplorable, as they always have been. When these cases were assembled in groups in wards assigned to them, there was some improvement. It was only when special hospitals were established, and all the resources of surgery applied, that the results were brilliant.

The American Surgical Advisory Committee was so impressed with those results that schools in the new methods were established in seven cities in the United States, under direction of the most skilled surgeons. With a personnel so trained, a special hospital for fractures was dispatched to France in March, 1918. A centre was created at Savenay, and its influence was so marked that up to January 13, 1919, among 55,059 casualties evacuated to the United States there were only 3,954 fractures, whilst among the 35,790 casualties remaining to be evacuated there were 7,600 fractures, the proportion being as 7 to 21 per cent.[3]

Experience forced a change of method upon the Canadian medical service also. Early in the war all cases of fracture were sent to England for treatment. Nothing more was attempted in France than the control of sepsis, and to immobilize the broken bone, so that the patient could be transferred with the help of box splint and double abduction frame. But the suffering was great; and the loss of limb and life was large. Henceforth these cases were retained in France, and at every base hospital an annex

was provided for their treatment. The principles were two: control of sepsis, accurate and permanent apposition of the broken ends of the bones. Sepsis was controlled by removal of foreign bodies, cutting away with new freedom all dead and dying tissue, and the use of germicidal fluids.

The bones were placed in apposition. They were kept so by ingenious and persistent application of splints. The preparation of these splints was entrusted to a special department where the best craft and skill was employed. The variety, number and material of these appliances would have amazed a civil surgeon. There was a splint ingeniously modified for every form of fracture that might occur in arm or leg, and they were freely used even at the time of the first dressing.

But all this mechanism would have fallen short of success, had it not been for the second innovation: the use of the movable *x*-ray apparatus by which a picture was made of the fractured bone as it lay in the splints on the bed. By reference to this pictured record corrections could be made by bandages, pressure, or extension, to secure a perfect alignment. By this system a patient never required to be moved until the bone was united.

The Thomas's splint justified itself beyond all other surgical appliances, and its employment in the front line was one of the most startling developments in the service. By the Canadians it was first used at Vimy Ridge. The Thomas's splint held its own until the end. It maintained extension during transport, and as modified by Major Sinclair and the double inclined wire plane of Groves, allowed the limb to be placed in a flexed position. For the fixation of the thigh in the abducted position Jones's frame was available. In the more permanent hospitals an overhead rail for the suspension of limbs was a great advantage. It also provided means for the employment of

the Balkan support as introduced by Lieut.-Colonel Miles. The utmost ingenuity was exercised in the manufacture of splints for every possible emergency. New forms were devised and old forms modified. No material went untried. Wood, metal, paper, rubber were used. These supplies were drawn from English stores; they never failed.

The Thomas's splint was considered so important that it obtained for its application a "drill by numbers." Drill merely means the best way of doing a thing. Even infantry drill is nothing more than a series of directions, based upon experience, by which soldiers can the most easily move to the place where they are wanted. When this ease of movement is acquired the drill disappears.

The Thomas's "outfit" consisted of a stretcher on trestles; blankets 3; a Primus stove; Thomas's splint—large size; reversible stirrups—Sinclair's suspension bar; 6-yard flannel bandages, 3; triangular bandages, 4; dressings; safety pins; Gooch splinting—10 by 6, and 8 by 6 inches. The personnel required was an operator and one or two assistants.

When not in use the splint was kept hung up. The five slings of flannel bandages were rolled round the inner bar of the splint; the leather was kept soft by saddle soap, and the iron bars smeared with vaseline. For front line application the indications were: All fractures of the thigh bones, except where there was an extensive wound in the upper part of thigh or buttock, which would interfere with the fitting of the ring; severe fractures about the knee-joint or upper part of the tibia; certain cases of extensive wounds of the fleshy part of thigh.

To illustrate, only once, the amazing care and forethought that was exercised in the army to attain perfection, the detail of only two out of the twelve movements of this "splint drill" is given:[4]

ON THE WORD "ONE." The stretcher, placed on trestles with a primus stove beneath, is prepared as follows: The

first blanket is folded lengthwise into three, two folds lie on the stretcher, one hangs over the side. The second blanket is arranged in the same way, one fold hanging over the side of the stretcher.

ON THE WORD "TWO." No. 1 assistant stands at the foot of the stretcher facing the patient and opposite the injured limb. Grasping the heel of the boot with his right hand and the toe with his left, keeping the arms straight, he exerts a steady pull, thereby producing the necessary extension. The No. 2 assistant supports the injured part above and below the fracture.

The most piteous aspect in the medical service was not the dead and those about to die, but the living whose facial wounds obscured their resemblance to humanity. Much was done to ease their pain and restore their appearance; but at best, after observing the cases or looking at photographs, paintings, and casts, and yielding full admiration to the triumph of surgical dexterity, one looks with pity upon the sorry spectacle. These horrid wounds were first repaired in a special surgical centre at Westcliffe, then at a general hospital, then at Sidcup, and in Canada at Montreal, Toronto, Winnipeg. Finally, the centre was transferred to Ste. Anne de Bellevue, afterwards to Toronto with all personnel and equipment, and the cases, 170 in number, were treated to a conclusion. All the resources of surgeons, dentists, and artists were lavished upon them; yet the much that was done was less apparent than the little that could be done.

In a series of papers from various hands assembled under the designation "British Official History of the War, Medical Services" 1922, in the second volume there is a paper by Sir G. H. Makins covering 60 pages, in which this conflict of opinion upon the treatment of wounds is well displayed. The writer considers it an "odd paradox" that the success of antiseptics depended on the skill with which the accompanying surgical measures were performed. Given such skill, exposure to the sun served as well as the most

elaborate system of antiseptics. This is not a paradox: it is truth, the old truth that in medicine theory cannot be divorced from practice. "Can it be concluded" he asks, "that the era of the employment of antiseptic media has closed in military surgery?" His answer is, "Although firm belief is still held in what are so unfortunately misnamed 'aseptic methods,' the use of antiseptic media will certainly continue." But few at the time suspected the existence of "combatants in opposing camps" or "the stress and turmoil of the struggle."

A short period of service in a field ambulance under a good commanding officer would have brought to these "combatants" a sense of reality; yet it would appear that there was "a small band of sturdy supporters" of both "systems" until the end. "It may probably be asked by the superficial observer in days to come," Sir George Makins concludes, "was this then the only result of the strenuous efforts and investigations of a whole army of pathologists and surgeons, exerted for a continuous period of four years with an illimitable amount of material at its disposition, a return to the fundamental edict of Hunter, that 'the injury done has in all cases a tendency to produce the disposition and the means of cure, the stimulus of imperfection taking place immediately calls forth the action of restoration.'" Not "probably," but certainly, the question will be asked; not only "in days to come" but now, and not by superficial observers alone. Antiseptics in military surgery are useful, useless, or harmful, not by their effect upon the wound but by reason of their effect upon the mind and practice of the surgeon who employs them.

[1] Surgeon-General U.S. Army, Report 1919, vol. ii. Base Hospital No. 31.
[2] Ibid. Base Hospital No. 37.
[3] Ibid, p. 1093.
[4] B 16926T WT. W. 3192—pp. 4223 500 2/21 H. & S. Ltd. p. 21/33.

# CHAPTER X

## DEVELOPMENT OF THE SERVICE IN THE FIELD

THE CASUALTY CLEARING STATION—THE AMBULANCE TRAIN—DEPÔTS, MEDICAL STORES—THE REGIMENTAL MEDICAL OFFICER

The fault of history is that it gives a fixed impression of events that proceed in swift and complicated succession. The more true it is for any given moment the more false it is for the moment that follows. The Canadian medical service had no existence in itself; it was an integral part of a vastly larger service, which in turn was an integral part of the army as a whole. Its disposition, establishment, and function was varied to meet the strategical conception of a campaign and the tactical plans of battle, defence, or retreat. A fixed adherence to any one formation would have been fatal. Indeed, at times, certain elements of the service disappeared entirely.

It was only during periods of stationary warfare as in the winters of 1915 and 1916 that the service operated on normal lines,—a field ambulance clearing from the regimental aid posts of the brigade which it served, through its own advanced stations to its main station, and thence to the casualty clearing station beyond the confines of the division. Such was the disposition at Ypres in April, 1915, when the action opened,—the headquarters of No. 2 Field Ambulance in the northeast area of the town; No. 3 at Vlamertinghe. Even already there had been a departure from the normal, for No. 1 was conducting a rest station at Watou, eleven miles to the rear; but on the second day

this unit was brought forward to Vlamertinghe. As the action progressed the aid posts and advanced stations were driven in; the main station in Ypres was disbanded, and the unit reformed by sections at various intervals until Brielen was reached. Through all that confused fighting each field ambulance is seen dissolving into sections, combining again, coalescing with the corresponding sections of the other two ambulances according to the need of the moment; and it required a skilled hand to control the movement.

At the Somme the process of development went further. The tent divisions of the three divisional field ambulances were combined to operate a main corps dressing station; the bearer sections and transport also worked as one. The evacuation in every battle varied according to the need, the tendency being to convey the more gravely wounded from the advanced station direct to the casualty clearing station without passing through a main dressing station. From the first this practice was adopted in case of abdominal wounds. It was tested more fully at Vimy Ridge. From Cambrai all cases, slight as well as grievous, came straight through Quéant to the casualty clearing station.

Formations so stable as general and stationary hospitals also varied from type to meet new needs. For each division two general hospitals were originally assigned. They contained 520 beds in each, but the number was soon doubled, and one unit was considered enough for a division. The divisional system was afterwards abandoned, and these hospitals were mobilized and concentrated in areas where their services could best be employed with a personnel of 30 officers, 70 nursing sisters, and 205 other ranks.

Of stationary hospitals two units were similarly considered the proper complement for a division; but these also were enlarged from 200 to 500 beds. They were origin-

ally designed as resting places on the lines for sick and wounded casualties on the way to the base; but in this war, the lines being short, they became small general hospitals; and being more mobile they were often detailed for special duties. In accordance with this policy No. 1, No. 3, and No. 5 were dispatched to the Mediterranean as early as August, 1915.

### The Casualty Clearing Station

The casualty clearing stations illustrate best this condition of continuous development. At times they were the main point of support in the fabric, and again their function was eliminated. In August, 1914, four of these units and a stationary hospital reached as far forward as Aulnoye, east of Mormal forest; but they never detrained. In face of the advancing enemy they returned through St. Quentin to the base, where the personnel was disbanded and assigned to other units. The wounded were passed through the Ambulances direct to the base.[1] Again at the battle of Vimy Ridge, No. 13 Canadian Field Ambulance was established at Hersin-Coupigny. To it came by motor-lorry all the walking wounded who had been collected from the Corps by No. 9 at Villers-au-Bois. After being fed and re-dressed, they were put direct upon ambulance trains, and sent to the base without passing through any casualty clearing station. The number so dealt with was 3,000 in 24 hours. Throughout the war this direct evacuation was a feature of the French service, as their lines were short and the base near. After September 6, when the battle of the Marne and the advance to the Aisne began, the casualty clearing stations were re-established, but on that occasion they were used more for the purpose of main dressing stations.

The casualty clearing station came into being during the South African war. It was formed to relieve the field

ambulance of the wounded and allow that unit to move forward with the troops. The field hospital, as it was then called, was combined with the bearer company to form the field ambulance of this war. This unit in that war was to do all the surgery demanded at the front, and the clearing station was merely to care for the patients until they were evacuated. It was a small unit with a personnel of eight officers and 77 other ranks; but in time a few nurses were added, and stretchers were carried for 200 cases.

In October 1914, when the army settled down in trenches, the casualty clearing stations found ample accommodation in permanent buildings near the line. In November, 20 beds were installed for the comfort of the more seriously wounded; hospital equipment was gradually acquired; nurses were added to the establishment; a dentist was taken on the strength, and all but the most urgent operative surgery was taken over from the more vagrant field ambulances. The stay of the patient at first was limited to four days, unless he were seriously ill; but this period was extended to weeks, if in the judgement of the surgeon it was necessary. The desperate wounds caused by shell-fire and the certainty of infection compelled the earliest possible resort to surgery. The casualty clearing station inevitably became the centre where that surgery was done. As early as June, 1915, the station was developing into a hospital. In a definite section of the line every man wounded in the abdomen was sent with all speed to the hospital. The method was so successful that by the month of August the practice was well established "in one army and soon spread to the others".[2]

The admirable results of this method were first experienced in a large way on the Canadian front during the heavy fighting around the St. Eloi craters in April, 1916. An advanced station was at Voormezeele, one at Dickebusch, and

another at Ouderdom, but cases of abdominal wounds proceeded direct to Remy Siding. One officer of whom the details happen to be known, was successfully operated upon and a kidney removed within six hours after he had fallen on the field nine miles away.

In June 1915, the Thomas's splint with stretcher suspension bar for treatment of fractured femurs was for the first time introduced into the casualty clearing stations, and only the limited supply prevented its use further up the line. At the battle of Vimy Ridge this appliance was in the hands of the regimental medical officer. Apparatus for diagnosis by the *x*-rays was installed, but the supply at first was limited to one for each army. Two operating tables were added; finally all the equipment and instruments for abdominal surgery were introduced.

A more significant development took place in preparation for the battle of Loos which opened September 25, 1915. Two hospitals devoted especially to abdominal operations were established within 6,000 yards of the line, even in front of the casualty clearing stations of which about twelve eventually became involved. On the first day 13,000 wounded were dealt with, and between September 25 and the end of October, 30,000 casualties passed through the stations.

The lesson of this offensive, as interpreted by Sir Cuthbert Wallace, whose guidance is followed in this account of the development of the casualty clearing station, was that such hospitals must be competently staffed and adequately equipped. Accordingly, in October 1915, a meeting was arranged between the Army Medical Service, the Royal Engineers, and the surgical consultants. It was agreed that every casualty clearing station should in future be equipped with two huts, each 60 feet long, one for operating and one for dressings. The operation hut was to be

divided into three rooms, one for giving the anaesthetic, one for sterilizing, and one for surgery, with space for three tables. Before the end as many as twelve tables were installed. Two new departments were added, first a resuscitation ward where the grievously wounded were treated for shock; secondly, a pre-operation ward where all the soiled clothes were removed before the man reached the theater.

The clearing stations were placed on sidings so that the ambulance train could come to the door. As a rule two or three casualty clearing stations were grouped together, and received the wounded in rotation. Reinforcements were provided so that each hospital had from thirteen to twenty-four medical officers, and about twenty nursing sisters.

The need for trained reinforcements was supplied by the surgical teams, as early as the battle of the Somme. The "team" consisted of a surgeon, an anaesthetist, a trained nursing sister, and an orderly. They were complete operating units, and carried their own instruments. They were obtained from the casualty clearing stations in a quiet part of the area and from units on the lines of communication. This system became more highly developed as time went on, and teams were moved even from one army to another as the work demanded. One team worked in twelve casualty clearing stations in eleven months. In addition to the teams, general duty officers were taken from the resting field ambulances and added to the casualty clearing stations. Many of these teams were drawn from the American forces. At one time over 600 American medical officers were so employed.

The tendency of every military unit is to root itself in the soil. Even an infantry battalion will in time accumulate so much impedimenta as to become immobile.

The casualty clearing stations became so much like stationary hospitals that the change was officially noticed. The unit was divided into two parts, in one 200 beds, in the other 800 stretchers. For a move 45 lorries were required. This immobility was disastrous in the German offensive of 1918, when several of the stations were captured, and the personnel either escaped on foot or were captured.

The detailed history of these units can best be exhibited in condensed form.

No. 1 C.C.S. mobilized, Valcartier, August, 1914. Arrived England, 14-10-14; at Taplow, 16-12-14. France; Aire, 6-3-15; Bailleul, 19-1-16; Aubigny, 4-3-17; Adinkerke, 17-6-17; Zuydcoote, 23-10-17; Ruitz, 23-11-17; Pernes, 28-4-18; Arneke, 1-8-18; Boves, 15-8-18; Agnez-les-Duisans, 1-9-18; Gosselies, 23-11-18. Germany; Euskirchen, 9-12-18; Bonn, 20-12-18. Closed, 12-2-19. The bed capacity varied from 200 to 900 with an emergency capacity in November, 1918, of 1,400.

Officers Commanding: Lieut.-Colonels F. S. L. Ford, August '14-June '16; T. W. H. Young, June '16-Feb. '17; C. H. Dickson, Feb. '17-Feb. '18; A. E. H. Bennett, Feb. '18 to closing of hospital. Chiefs of Surgery at various times: Majors R. H. Macdonald, E. W. Archibald, W. L. McLean, H. E. Ridewood, R. B. Robertson. Matrons: V. A. Tremaine, C. E. Cameron, J. W. G. MacDonald, S. P. Johnson.

No. 2 C.C.S. mobilized Toronto, February, 1915. Arrived England, 29-4-15; Shorncliffe, 4-5-15 to 16-9-15. France: 17-9-15. Personnel detailed to other hospitals for training purposes, until Aire, 31-1-16; Remy Siding, 10-8-16; Esquelbecq, 15-4-18; Remy Siding, 16-9-18; Leuze, 16-11-18; Huy, 5-12-18. Germany: Bonn, 21-12-18. Closed 7-2-19. The bed capacity varied from 300 to 500 with an emergency capacity in November, 1918, of 1,200.

Officers Commanding: Lieut.-Colonels G. S. Rennie, Feb.-May 1915; W. A. Scott, June-Aug. 1915; J. E. Davey, Aug. '15-Nov. '17; P. G. Brown, Nov. '17, to closing of hospital. Chiefs of Surgery at various times: Majors H. L. Jackes, L. B. Robertson, S. J. Streight. Matrons: H. Graham, M. H. Forbes, L. G. Squire.

No. 3 C.C.S. mobilized Winnipeg, June 1915. Arrived England, 11-7-15. France: Remy Siding, 2-4-16; Frévent, 26-3-18; Ligny-sur-Canche, 7-6-18; Varennes, 1-9-18; Ypres, 1-10-18; le Quesnoy, 1-11-18. Closed, 13-3-19. The bed capacity varied from 200 to 900.

Officers Commanding: Lieut.-Colonels R. J. Blanchard, June '15-Nov. '17; J. L. Biggar, Nov. '17-June '18; F. A. Young, June '18 to closing of hospital. Chiefs of Surgery at various times: Majors W. A. Gardner, F. A. C. Scrimger, W. L. Mann. Matrons: C. M. Hare, B. F. Mattice, S. M. Hoerner, N. M. Wilson.

No. 4 C.C.S. mobilized Winnipeg, March, 1916; arrived England, Ramsgate 15-1-17 to 1-6-17—France: Longuenesse, 30-6-17; Ruitz, 11-12-17; Pernes, 27-3-18; Esquelbecq, 31-7-18; Boves, 11-8-18; Agnez-les-Duisans, 1-9-18; Bois-de-Montigny, 30-10-18; Valenciennes, 7-11-18; Mons, 7-12-18. Closed 3-4-19. The bed capacity varied from 200 to 850 with an emergency capacity in November, 1918, of 1,025.

Officers Commanding: Lieut.-Colonels S. W. Prowse, June '16-Dec. '17; S. Campbell, Dec. '17-Jan. '19; J. L. Cook, Jan. '19 to closing of hospital. Chiefs of Surgery at various times: Captains J. O. Todd, D. F. McIntyre, J. Pullar. Matron, I. Johnson.

### The Ambulance Train

From the casualty clearing stations evacuation was by hospital or ambulance train. When the British Expeditionary Force arrived in France there was not a single hospital train in operation within the area assigned to it. The only provision was a series of freight cars in which wooden frames had been erected to accommodate the stretchers. There were no sanitary arrangements or means for cooking, no room for attendants, and no communication between the cars. The journey was slow and long; the suffering of patients was intolerable. Within a few weeks the medical service created hospital trains from old or disused carriages, and they were so well adapted for the purpose that seven of them remained in use until the end. On September 10,

Sir John French inspected the arrangements, and wrote, "I was able to visit some of the hospital trains. Although there has been no chance yet of fully developing the organization of the transport service for the wounded, I think the best was done with the means available at the moment."[3]

With the thirty hospital trains in operation when the Canadians arrived in France they found efficient transport for their wounded. The earlier cars were mounted on a pair of two-wheeled trucks; they were without springs, and were worked by hand brakes only. Access was easy, for the doors were wide; but after the train started the wounded could receive little attention, and there was no warmth. The more lightly wounded were carried on open cars strewn with straw, and the method though rough was effective.

The next type of train was made up of passenger cars divided as usual into compartments with a saloon or restaurant car for general purposes. These cars ran on three trucks and were well sprung; they were lighted and there was some provision for heat. Each compartment carried four stretchers laid across the line of travel. Access was difficult through the narrow doors, and attendants were compelled to pass by the running board to visit the patients.

In time a more complete ambulance-train was developed, made up of corridor cars for sitting patients, and "ward cars" for the more helpless. In these more modern cars, which were built for the purpose, six sets of three berths were arranged on each side parallel to the line of travel, giving accommodation for thirty-six patients, which could be increased to forty by placing stretchers on the floor. The berths were open at the ends, and were provided with mattresses, pillows, sheets, and blankets. The

patient was put to bed, unless there was some special reason why he should not be disturbed. In that case the stretcher was laid upon the bed. The doors were wide; the cars were mounted on eight-wheeled trucks with good springs, and they could be entered at both ends. The whole train was lighted by electricity, heated from the engine, and controlled by air-brakes.

An ambulance train was an imposing spectacle, consisting of at least fifteen full-sized cars. First went a locomotive of the usual passenger type. In order were an isolation ward; sleeping quarters for the medical and nursing staff; a kitchen; four ward cars; a car containing an office, operation room, and dispensary; five cars for the sitting patients; quarters for the sub-staff; a van for stores; and the guards van. Such a train would carry 400 patients, a staff of two or three medical officers, four nursing sisters, and the subordinate personnel. It could be loaded in twenty-five minutes, and was then managed as a hospital unit, the staff remaining on duty for the whole journey.

Before the end a further improvement was introduced to utilize all the space. The latest pattern of ambulance train was composed entirely of ward cars. For sitting cases the middle berth in the tier was turned up, and the lower berth then formed a comfortable seat for four persons. The train would stop at various rail-heads until it was filled, and then proceeded towards the base at a speed of twelve miles an hour. Upon arrival the train was met by an ambulance convoy with bearers, and the occupants were distributed to the hospitals where room was available. The ambulance cars by which patients were transferred from the general hospitals to ships for transport to England were not army units; they were maintained by the Red Cross Society, and were usually driven by women.[4]

The ambulance train in Canada had a humble origin at Valcartier. A colonist car was adapted for sitting patients, and an express car was fitted with bunks for more serious cases. The cost was moderate,—a rental of ten dollars a day for the cars, and a movement charge of ten dollars for the journey to Quebec. The permanent staff was one cook. In October, 1916, a sleeping car was converted to accommodate 18 stretchers. After that date something more elaborate was required. The trains were made up of five units of two cars each, making ten cars; to this was attached a dining car and a baggage car. There were two of these trains, and they were returned to the railways when their services were no longer required. In the German army 238 ambulance trains were in continual operation. The battle of Vimy Ridge opened at half-past five in the morning. By two o'clock the same afternoon ambulance trains were arriving at Charing Cross in London with the first of the wounded.

### Depôts, Medical Stores

Base depôts of medical stores were established at the ports, and advanced depôts were pushed forward into each army area, from which casualty clearing stations and field ambulances drew their medicines and equipment. The regimental officers in turn were supplied from the ambulances. When an indent could not be filled exactly there were always substitutes which served the purpose. Only one of these depôts was of Canadian origin, and all supplies were drawn from British stores.

The following statement will show the extent of medical stores supplied to all the British forces overseas from August 4, 1914, until November 11, 1918, no account being taken of supplies to hospitals in England or of the initial equipment of units before proceeding: Number of medical units equipped: 16 base depôts of medical stores; 40 ad-

vanced depôts of medical stores; 122 general hospitals; 79 stationary hospitals; 101 casualty clearing stations; 394 field ambulances; 66 hospital ships; 65 ambulance trains; 96 convalescent depôts. Combatant units equipped with field medical equipment were: 81 headquarters units; 2,059 regimental units.

Material was supplied as follows: 3,460 tank outfits; 1,774 aeroplane outfits; 250,000 surgical instruments yearly; 96,500,000 assorted bandages; 75,061 miles of gauze; 6,432 tons of lint and wool; 1,400,000 splints; 21 mobile bacteriological cars; 9 mobile hygiene cars; 1,071 high-pressure sterilizers; 479 cholera outfits, for 100 cases each; 520 *x*-ray outfits; 1,075,600 *x*-ray plates during one year; 284,364 completed prescriptions for spectacles; and 142 ophthalmic centres. Total of cases and bales of medical stores shipped overseas was 525,780 in number.

### The Regimental Medical Officer

Officers of the medical services are attached to all formations. They are known as regimental or battalion medical officers. They accompany their units into action, and have a small staff of personnel to give first-aid to the wounded. In addition they are advisers on the sanitary conditions of their area, and the health of the troops.

The medical officer attached to each combatant unit is regarded as an officer of that unit. Although he cannot issue orders, he may offer advice; and he would be a rash and hardy commander who should disregard any sound advice or reasonable request made to him by his medical officer. It is part of his responsibility that all sanitary arrangements are complete; all cases of sickness promptly attended to; he must check or prevent sore feet and infections, and strive to lessen the effect of strain and exposure

by insisting upon proper cooking, dry beds, cleanliness, and the issue of rum when it is required.

He must be tender to the weak, and harden his heart against the malingerer or him who would shirk. In the line he tends the wounded when they are carried back to some convenient spot where he has set up his flag. He visits all outposts. He trains the 16 stretcher bearers of the unit and provides them with medical stores. He instructs the water details in the provision of safe water. He has his own orderly, who is expert in all medical routine. Out of the line he holds daily sick parades.

The regimental medical officer may be likened to the general practitioner or family physician for a thousand men. In many cases he remained for years with his battalion, refusing change and even promotion, preferring the service he knew and loved so well, enamoured of the simple and reflective life in the trenches. In time he became the friend of every man, knew their names and faces, and the ultimate history of their lives. He knew the hardy soldier who suffered in silence as well as the man who made the most of his ailment. He had his office or aid post to which all might come, formally upon sick parade or privately as occasion required, and these parades diminished in size as the officer gained experience.

The following list contains the names of 13 medical officers who served with their battalions from 18 months to three years: Captains H. H. Argue, W. Brown, J. A. Cullum, H. Hart, W. Hale, N. M. Halkett, R. A. Ireland, F. W. Lees, H. W. McGill, J. P. Peake, D. E. Robertson, W. H. Scott, and H. G. Young.

The value of a good regimental medical officer cannot be over estimated. He maintains the health of the troops by attention to the food they eat, the water they drink, and the cleanliness of their surroundings. He checks

epidemical sickness by constant watchfulness over all febrile cases; he persuades, or compels, the men to keep themselves fit for duty by their own efforts towards cleanliness and the early care of abrasions. A powerful element in morale is the certainty in the soldiers' minds that they will be cared for if they fall; the presence of the medical officer at the advance is a sign that relief is always at hand.

The regimental aid posts were usually comfortable and sometimes luxurious. The sappers took pride in their construction, and men were always available to excavate, drain, and strengthen a habitation which was fairly certain to become a refuge for themselves. A deep cellar, a dug-out old or new, a cave, or the blind end of a trench was soon transformed into a surgery. It was always splinter proof, and when time allowed it was strong enough to resist all but a direct hit. In the more permanent posts the roof was composed of a bursting layer of stone or brick over sand-bags supported upon heavy beams of wood on steel supports. Entrance was gained by ten to twenty steps into a commodious apartment of three rooms,—one for the medical officer, one for the two orderlies with their stretcher beds, a central area with a pair of trestles, a compartment with standards to support six stretchers, and space for storing kits. Each doorway was guarded by a rolled blanket properly saturated against gas. A bench, a few chairs, a table for splints, dressings, solutions, and instruments; a stove for warmth and hot liquids completed the equipment, and there was always a second means of exit. With an even floor and head room of nearly seven feet, this abode heated by a brazier and lighted by an acetylene lamp was a comfortable dwelling for the medical officer and a desirable place of resort for his friends.

The force at the disposal of the battalion medical officer was thirty-one men. He had a sergeant, a corporal

and four other ranks from the medical corps, whose specific duty was care of the water supply; a lance-corporal and driver for his medical cart drawn from the battalion; two men from each half company as stretcher bearers. These with eight sanitary details were posted throughout the area occupied by the battalion, and were visited by the medical officer many times during the day.

These medical orderlies by constant training and long practice attained an extraordinary skill in applying first aid by means of material from their haversacks and the dressing which every soldier carried in a pocket in the skirt of his tunic. The wounded man, if unable to walk, was borne to the aid post for further treatment or evacuation, but if the case was one of fracture or otherwise serious, the medical officer was sent for; splints were applied; serum and morphine were administered; and the fact was recorded on the medical card fastened to a button of the man's tunic, as well as indicated by a letter drawn with iodine upon his forehead or wrist. The evacuation of patients to the aid post and the advanced station of the field ambulance was one of great labour. At times the trenches were impassable for men carrying any burden. The earth slid down into the water; as one walked, the foot sank through to the bottom; the leg was grasped by the earth, and could only be extricated by clasping the hands behind the knee. By continual traffic this earth and water was trodden into mud; and it was only when there was plenty of water, which there usually was, that the trenches became comfortable again. At times dead bodies would be found embedded in the mud, and these were a further obstruction until cleared away by working parties.

In the first stage towards the rear the stretcher was universal, and the standard stretcher held its own until the end. Many new devices were tried, and they were of

value in special cases. Chairs of various patterns were useful in deep narrow trenches having traverses and sharp bends. Wheeled stretchers were of great ease to bearer and wounded on level ground. In set battles sections of light rails were pushed up to the very front, and ambulance trollies provided a swift and easy means of evacuation. These little cars had room for two stretchers on the floor, and two upon supports above; they were easily pushed by one man where the grade was good, and conveyed patients with ease and speed to the motor-ambulances. The German prisoners adopted the practice of carrying patients shoulder high; it was an efficient method when enough prisoners were available to supply four for each stretcher. For these good offices they had many rewards, but as they rarely made a second trip, the stretchers accumulated at the stations.

The surgery demanded of the regimental medical officer became less in variety as the war went on, and the services behind him became more perfect. With increased speed of evacuation his surgical procedure was quite definitely limited. By January, 1918, his duties were embodied in the official dogma: "Get the wounded man to the casualty clearing station as soon as possible. Do all you can for him at the regimental aid post or the advanced dressing station, and do it as thoroughly and as quickly as you can, so that there will be no need to disturb the patient again on his journey down."[5] This injunction applied to ambulance officers also.

The general principles guiding the treatment of wounds of war were considered formally at a surgical conference held in Paris in March and May, 1917. Delegates from England, and the Dominions, from Belgium, France, Italy, Portugal, and Serbia attended. They laid down a certain procedure, which was a compromise, and unsuited as a whole for the Canadian service at least.[6]

The best summary of the surgery to be performed in regimental aid posts and field ambulances was set forth by Colonel Sir H. M. W. Gray, and Captain K. M. Walker, printed in the field by the 3rd Field Survey Company of the Third Army. Out of the general experience a certain definite practice evolved. In the forward area surgical conditions were met, which would otherwise cause instant death, but wounds were not explored or washed; they were protected with a dry dressing. This applied especially to wounds of the brain, cord, and chest.

Fractures were provisionally fixed with splints. Haemorrhage was checked by compression or by forceps. If a tourniquet was applied, the case was put in a special category for instant evacuation, since a tourniquet is one of the most dangerous weapons of war. Completely shattered limbs were removed. Dressings were examined at two stages on the journey down; they were sometimes too tight; but stretcher bearers became so skilled that it was quite common to pass patients all the way to the casualty clearing station without any disturbance of the first dressing. A remarkable skill was also developed in the preparation of aseptic dressings in the most advanced posts.

For purposes of record a man who received morphine was marked by indelible pencil or iodine with *M* on the forehead; if he received anti-tetanic serum, he was marked *T* on the wrist, with the quantity stated. At the ambulance a field medical card was attached to a button of the man's tunic. It bore the stamp of the ambulance, a description of the injury, the hour and nature of any operation performed, name of drugs administered, and the signature of the medical officer.

No operations were performed which required a general anaesthetic, but morphine was freely administered; some

men carried a few tablets against an emergency, or even tubes with needle attached. This practice was dangerous; no record was available of the amount self-administered, and death might be caused if the regular dose was added. Slowly dissolved under the tongue a half-grain was quite effective; swallowed it was of little value. The medical officer carried a bottle containing a solution of such strength that the full of a syringe would equal half a grain. The bottle had a rubber cap through which the needle was introduced; when not in use the syringe was carried in a bottle with a perforated cork through which the needle was kept immersed in alcohol.

But morphine to be of much value must be given early, in adequate amount, and accompanied by quiet and warmth. In the absence of these conditions a cigarette was of some comfort. Warmth, rest, and freedom from pain the wounded crave most. By these measures more than by any other their lives are saved. Late in the war every station had a resuscitation ward, heated by the rudest appliances, in which many men were brought back to life.

Of all remedial measures in the forward area, warmth was the most important. Each patient required two blankets, and by proper arrangement he could have four folds to lie upon, and two to cover him. With his great-coat laid over all, he could be protected from cold especially in ambulance cars heated by their own exhaust. At times rubber sheets were available, and it was the ambition to return the blankets dry. Bottles of all kinds were used to contain hot water and impart warmth, and most ingenious efforts were made to heat the dressing stations. Thirst next to cold was the dread of the wounded; supply of hot drinks was unfailing; of all sweetened tea was the best.

83635—10

The psychology of the wounded is a subject in itself and full of surprise. Wounds cause no pain at the moment. They are received with a sense of wonder. A man who had his hand cut off by a piece of shell would examine the stump with the greatest curiosity. He would take the packet of dressing from the skirt of his tunic, and invoke the aid of a companion to bind up his wound, possibly displaying some irritation over the destruction of his wrist-watch. Wounds are almost bloodless. Most amazing of all is the silence of the newly wounded as they lie upon their stretchers, their apathy and unconcern. On the part of those who themselves were as yet unwounded there was a sense of pity tinged with shame, as all pity is; a feeling of repugnance, as there always is in the presence of approaching death. But the pain was not long delayed. It became atrocious and had best not be spoken of even in a history of military medicine. To witness this suffering which they could so imperfectly allay was the continuous and appalling experience of the nurses at the front and at the base.

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[1] *The Rise of the Casualty Clearing Station.* B.M.A. proc., 1919. Sir Cuthbert Wallace.

[2] Ibid.

[3] *1914.* Sir John French, p. 137.

[4] *Brit. Med. Journal.* Special No. 1917, p. 121.

[5] W.O. 40 Misc. 2,051.

[6] W.O. 24 Gen. No. 6,033.

# CHAPTER XI

## ADMINISTRATION

Upon the departure of the 1st Division to France, a permanent headquarters of the medical services was organized in England, consisting of a director, a deputy, and two assistants, as well as assistants in the various training areas, where forthcoming Canadian troops were to be in occupation. This organization subsequently grew to the strength of a Director-General, an Assistant Director-General, two Deputy Directors assisted by a staff of 28 officers, a Matron-in-Chief of the nursing service with three assistants, and 158 other ranks, the latter including 41 civilian clerks. The control of the medical services in the Canadian army was centred in London, where the Director-General had his headquarters and staff. In the field his deputy was the responsible adviser of the Corps Commander; his Assistant Director advised the commander of a division, and was himself in command of the divisional medical services.

In the outside administrative areas: Bordon, Bramshott, Buxton, London, Ripon, Seaford, Shorncliffe, and Witley, there were finally eight assistants and a corresponding number of deputy assistants and small clerical staffs, together with boards for classifying troops in these areas. These administrative medical officers operated under the Canadian general officers commanding the areas, and were left undisturbed by the British medical services.



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From the moment of their arrival in England the Canadian troops were entirely dependent on the Imperial forces for supplies.[1] Their equipment was drawn from the same source.[2] The stores brought from Canada became surplus and accumulated in the Ashford depôt. The Imperial authorities became solely responsible for providing accommodation and equipment for all Canadian hospitals and all Canadian troops in England. The surplus was still further increased under the arrangement by which the Imperial forces agreed to maintain the clothing and equipment of the Canadian personnel in France at a stated price per person. The depôt at Ashford was closed; the stores were sold; and some 600 men were released for general service.[3] The Imperial authorities provided the quarters for personnel, all hospital buildings and barrack equipment; the Canadian authorities provided all personnel, technical, medical, and ordnance equipment, as well as rations, fuel and light, pay and clothing of Canadian personnel, clothing and re-equipment of Canadian patients in England.

A rate of 3 shillings per day was charged the Imperial authorities for all patients other than Canadians treated in these Canadian hospitals. Likewise, the Canadian authorities paid the Imperial authorities at the same rate for Canadian patients treated in other than Canadian hospitals in the kingdom. The Imperial authorities provided all rail and ocean transport for Canadian patients, except the hospital ships for invalids to Canada, which was entirely an obligation of the Canadian government.

The Canadian medical units organized in Canada came overseas fully equipped with all technical medical equipment, and partially with tentage, ordnance, and barrack equipment. Subsequently, it was agreed upon that the Imperial authorities should provide all equipment for units after proceeding overseas from England. Initial equip-

ment, according to War Office schedule, was provided by Canadian authorities, and it was maintained in the field by the War Office, according to agreement.

To coördinate the operations of the Canadian hospitals, the Army Council Instructions issued by the War Office in general applied to the administration of the Canadian medical formations, but special Instructions were drawn up, modified and adapted to the special needs of the Canadian administration. Such modifications became necessary when Canadian patients had ultimately to be collected into Canadian special and convalescent hospitals, and those requiring more than six months' treatment were to be invalided to Canada. The Director-General of the Canadian service worked in close co-operation with the departments of the Director-General at the War Office.

Overseas from England, the Canadian army medical service came directly under the administration of the Director-General of Medical Services of the British Armies in France; and under the Director of Medical Services of the British Expeditionary Force in the Mediterranean, where it operated with the Royal Army Medical Corps. The medical services of the four Canadian divisions and of the Canadian Army Corps operated under the administration of the Director of Medical Services of the army in which they happened to be serving at the time. As a rule, the Canadian Corps moved as a unit, but occasionally one Canadian division found itself detached; it then came immediately under the medical administration of the Deputy-Director of Medical Services of the corps to which it was attached, reinforcements and supplies being received in the usual way.

Some slight variation occurred in the composition of the Canadian organization and establishments in the field. Each field ambulance had always a full complement

of nine medical officers, and one dental surgeon attached from the Canadian Army Dental Corps. This corps operated as a separate organization and not as a part of the medical corps, although it came under the medical service for administration in the field. The medical service held successfully after much contention that all matters pertaining to the health of the troops, including dentistry, were its special obligation.

In addition to the usual organization of 3 field ambulances and 1 sanitary section to each division, an additional field ambulance, a sanitary section, and a dental laboratory were supplied to the Corps. The sanitary sections were at first administered as divisional troops, latterly as corps troops, but at no time as army troops, as in the British organization.

For the lines of communication and base units overseas from England the Canadian medical service supplied 1 mobile laboratory, 1 advanced depôt of medical stores, 4 casualty clearing stations, 7 stationary hospitals and 8 general hospitals, two of these stationary and two general hospitals operating in the Mediterranean, and two general hospitals in Paris on loan to the French Government, but for discipline remaining under the administration of British General Headquarters. All these Canadian medical units were administered in the same manner as the British medical units by the medical authorities at general headquarters, lines of communication, and base.

Under agreement with the Imperial authorities in 1918, a Canadian Section was established at general headquarters in pursuance of the policy, that for military operations the Canadian forces should be under the Commander-in-Chief; for organization and administration under the Canadian Government, as represented by the Overseas Ministry in London. A medical department was

created as part of this plan with Brig.-General A. E. Ross in command at Montreuil, which was at that time the general headquarters.

All Canadian medical units in the field received, cared for, treated, and evacuated all patients irrespective of nationalty: members of any component part of the Imperial army as well as French, American, and Portuguese allies. Canadian patients were evacuated from France in the same manner and under the same arrangements by the Imperial authorities as other members of the Imperial and allied armies. On arrival in the United Kingdom they were distributed to such hospitals as the exigencies of the service demanded; Canadian convoy hospitals in England receiving patients from all the armies of the allied forces; and Canadian patients were in varying practice directed to Canadian hospitals. By final agreement with the War Office, arrangements were arrived at whereby Canadian patients, as soon as they were fit to be moved comfortably from their first hospitals in England, were sent to Canadian general, special, and convalescent hospitals, where they were treated to a finality or invalided home by Canadian hospital ships.

The medical arrangements, including segregation, inspection, sanitation, and all preventive medical measures as well as treatment in hospital together with medical boarding and classifying of the Canadian troops in training in England were carried out exclusively by the Canadian medical services. In the early days of the war, and latterly on the opening of new camps, as a temporary measure Canadian patients were sent to the nearest English hospitals, which were generously placed at their disposal. The principle which guided the Canadian medical services overseas was to provide sufficient hospitals in England and France to meet the normal needs of the Canadian army,

and reciprocally its hospitals were at the disposal of the Imperial authorities should they require their use. Two British general hospitals in England, Shorncliffe Military and Kitchener Hospital, Brighton, were staffed by the Canadians; the hospitals remained under their previous administration, the Canadian Headquarters being concerned only with paying the personnel, and reinforcing as required.

The medical profession of Canada was placed wholly at the command of the service. Men who had attained to celebrity in the various special departments gave all they had of skill and experience, forsaking ease and private gain. These consulting surgeons were: Colonels G. E. Armstrong, A. Primrose, J. A. Hutchison, J. Stewart, J. A. Gunn; and J. M. Elder in France. The consulting physicians were: Colonels F. G. Finlay, R. D. Rudolf, C. F. Martin; and John McCrae in France. The consultant in sanitation was Lieut.-Colonel J. A. Amyot.

The Canadian service was enriched by the accession of Canadian physicians who had attained to eminence in other lands. As consultants Sir William Osler, Mr. Donald Armour, Mr. J. B. Lawford, and Dr. G. W. Badgerow joined the force; from the United States came Dr. Thomas McCrae, "the greatest authority on enteric fever in America," Dr. Thomas Futcher, and Dr. Llewellys F. Barker; and Dr. R. Tait McKenzie to the English service.

Sir William Osler was indefatigable. He was the friend of every man, showing kindness, offering advice, and venturing criticism; and from his criticism all but the most hardened shrank. It was he who persisted until the *Journal* of the Canadian Army Medical Service was published under the direction of Colonel Adami, "for the sake of stimulating men in their work, as a medium for scattered scientific papers, and to place before the profession the results of treatment in the various hospitals."[4] He kept

himself informed of every movement. To a humble captain who gained any distinction he would send a message; to Major-General Foster on his return to Canada he wrote under date, November 17, 1919: "I am desolated not to see you, and say 'Good-bye' in person. Hearty thanks for all the good work you have done. You took over a tough job and have pulled it through."

These administrative duties were performed by a series of staffs. Their personnel is worthy of record:

War Office. D.G.A.M.S. Lieut.-General Sir A. T. Sloggett, until October, 1914: Lieut.-General Sir Alfred Keogh, October, 1914, to December, 1917; Lieut.-General Sir T. H. J. C. Goodwin, Dec., 1917.

France, General Headquarters. D.G. Lieut.-General Sir A. T. Sloggett; Lieut.-General Sir C. H. Burtchaell, June, 1918.

D.D.G. Major-General Sir T. J. O'Donnell; Major-General Sir W. G. Macpherson, May, 1916.

A.D.G. Major-General Sir C. H. Burtchaell; Colonel W. R. Blackwell, June, 1918.

First Army. D.M.S. Major-General Sir W. G. Macpherson, succeeded in November, 1915, by Major-General Sir W. W. Pike, succeeded in July, 1917, by Major-General Sir H. N. Thompson.

Second Army. D.M.S. Major-General R. Porter, succeeded in December, 1917, by Major-General Sir M. W. O'Keefe, succeeded in April, 1918, by Major-General S. Guise Moores.

Third Army. D.M.S. Major-General Sir F. H. Treherne succeeded in March, 1916, by Major-General Sir J. Murray Irwin.

Fourth Army. D.M.S. Major-General Sir M. W. O'Keefe.

Fifth Army. D.M.S. Major-General C. E. Nichol, succeeded in November, 1916, by Major-General B. M. Skinner, succeeded in July, 1918, by Major-General J. J. Gerrard.

Canadian Army Medical Corps.

H.Q. London, D.M.S. Major-General G. C. Jones, succeeded Feb. 11, 1917, by Major-General G. L. Foster.

Colonel H. A. Bruce acted from Oct. 13 to Dec. 30, 1916. A.D.M.S. Colonel L. Drum, succeeded in 1916 by Colonel Murray MacLaren.

Reorganized 1917. D.G.M.S. Major-General G. L. Foster, A.D.G.M.S. Brig.-General H. S. Birkett, D.D.M.S. Colonel H. A. Chisholm, and Colonel F. C. Bell.

Canadian Section G.H.Q., August, 1918, Brig.-General A. E. Ross.

H.Q. Canadian Army Corps, France, D.D.M.S. Colonel G. L. Foster, succeeded in Feb., 1917, by Colonel A. E. Ross, succeeded in Aug., 1918, by Col. A. E. Snell. D.A.D.M.S. Major A. E. Snell, succeeded in May, 1916, by Lieut.-Colonel F. S. L. Ford, succeeded in Feb., 1917, by Major G. H. R. Gibson, succeeded in Sept., 1918, by Major R. M. Gorssline, succeeded in Feb., 1919, by Major H. C. Davis.

1st Canadian Division. A.D.M.S. Colonel G. L. Foster, succeeded in Sept., 1915, by Colonel A. E. Ross, succeeded in Feb., 1917, by Colonel F. S. L. Ford, succeeded in July, 1917, by Colonel R. P. Wright, succeeded in January, 1919, by Colonel G. Boyce. D.A.D.M.S. Major H. A. Chisholm, succeeded in May, 1916, by Major G. H. R. Gibson, succeeded in Feb., 1917, by Lieut.- Colonel C. P. Templeton, succeeded in August, 1918, by Major A. L. Jones.

2nd Canadian Division. A.D.M.S. Colonel J. T. Fotheringham, succeeded in March, 1917, by Colonel H. M. Jacques, succeeded in Jan., 1918, by Colonel R. M. Simpson. D.A.D.M.S. Lieut.-Colonel H. M. Jacques, succeeded in March, 1917, by Major T. A. Lomer, succeeded in Dec., 1918, by Captain J. K. Mossman.

3rd Canadian Division. A.D.M.S. Colonel J. W. Bridges, succeeded in May, 1916, by Colonel A. E. Snell, succeeded in Aug., 1918, by Colonel C. P. Templeton, D.A.D.M.S. Major R. M. Gorssline, succeeded in Sept., 1918, by Major E. L. Warner.

4th Canadian Division. A.D.M.S. Colonel H. A. Chisholm, succeeded in May, 1917, by Colonel C. A. Peters, succeeded in Jan., 1919, by Colonel P. G. Bell. D.A.D.M.S. Major J. S. Jenkins, succeeded in Sept., 1917, by Major G. G. Greer, succeeded in Dec., 1918, by Major J. C. Maynard.

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[1] Report O.M.F.C. 1918, p. 72.
[2] Ibid., p. 82.
[3] Ibid., pp. 82, 84.
[4] H.Q., Letter O. 112. October 26, 1917.

# CHAPTER XII

## ORGANIZATION

It cannot be reiterated too often that the Canadian medical service was organized long before the war as an integral part of the British service. Indeed the services of all the Dominions and of India conformed. There was a unity of design, plan, command, and administration. This principle endured to the end, and without a break stood the hard strain of war.

The regimental medical system disappeared from the British Army in 1873. Under the provisions of the Royal Warrant of that year the office of Surgeon-General and of Deputy Surgeon-General was created, or rather reaffirmed in a new sense. This marks the beginning of the modern administrative method.[1]

The history of the British Army begins with the reign of Charles II, when the old army was disbanded and certain regiments re-embodied for the foundation of the Regular army. Each regiment of foot and horse had its surgeon, and the Life Guards had a surgeon to each troop. "Chirurgeons' mates" were added to the establishment in 1673, and in 1684 every regiment of foot had a mate as well as a surgeon. The mates were appointed by warrant; the surgeons were commissioned officers.

Out of the need arose a medical staff composed of a surgeon-general and an apothecary-general. In time of war something was necessary more than the regimental establishments; general hospitals were formed, and officers

were appointed "to the hospitals" on the outbreak of hostilities. When peace came these hospitals were disbanded, and it was many years before they became part of the regular establishment of the army with a permanent staff to direct them.

The term "Staff Surgeons" designated all surgeons not belonging to regiments, who were employed on the staff of the General in the field, or in a general hospital or garrison. They were selected and recommended by the Surgeon-General, and were posted by him as required. The relative rank of a surgeon from the year 1858 was that of major, and carried with it the usual precedence and advantages, except that of president of courts martial. At various times physicians were appointed in addition to surgeons; but of these there were ten only, all during the American rebellion.

Even in those early days the method of appointment, not being under medical control, was a failure; and from the ambiguity of status the customary evils arose. The effect of a medical unit not completely under control of the army for purpose of training, administration, and discipline, disclosed itself in the Crimean war. There was in that campaign an ambiguous formation known as the "Hospital Conveyance Corps." The duties were to act as stretcher bearers in the field, as attendants in the hospitals, to take charge of transport, to supply medical staff officers with servants. The corps was an utter failure, "owing to lack of training of the men, their loss of activity from age and infirmity, and their general drunken and disorderly habits."[2] The surgeons' mates, having only warrant rank, were subject, with the rank and file, to the full rigours of regimental discipline, and it is on record that they shared with them the privilege of being flogged.

The low status of the mate and the low rate of pay left the Army unprovided with mates on the outbreak of war with France in 1793. An army medical board was constituted which had sufficient influence to secure the Royal Warrant of November 30, 1796, by which the pay and position of regimental surgeons and mates were improved. The medical stores were supplied not at the expense of the surgeons, but at the public charge. The pay of surgeons was increased, and for purpose of allowances and quarters they were to rank as captains. Surgeons' mates became assistant surgeons and were appointed by commission. Their pay was also increased and they were to rank as subalterns.[3]

The medical administration of a local area was entrusted to the "Principal Medical Officer," a designation which was in use for over a hundred years, and only abolished after experience in the South African war had disclosed the difficulty of determining which of two officers was the "principal". From the officers themselves little help was received for assisting to a decision. This designation is first encountered in the latter part of the 18th century, when the control of a hospital was placed in the hands of the senior medical officer who was usually a physician; but the jealousy habitual at that time between physicians and surgeons made itself felt, and by the year 1808 the practice fell into disuse.

A new nomenclature for the service was published in 1907. The Principal Medical Officer of the field force became the Director of Medical Services, and his immediate subordinate, Assistant Director; the Principal Medical Officer on the lines was designated Deputy Director, and his subordinate, Deputy Assistant; the administrative medical officer of a division somewhat later was known as Assistant Director, and his subordinate, Deputy Assistant, all of

medical services. The designation of the head of a hospital or other unit was Officer Commanding.

Medical military titles from the earliest times were used carelessly and curiously. The grades were continually shifting, and there was continuous discontent. This discontent was not entirely personal; it was a sign of the struggle to elevate the civil profession to a place with the other professions, and military medicine to an equality with the other arms of the service. By the year 1890 the civil profession had achieved its purpose. The army soon yielded; but only after a somewhat truculent controversy in the medical journals had stopped medical graduates from entering the service under the previous terms.

On October 17, 1893, it was notified that the designation of the substantive rank of officers should be altered to agree with those of officers on the active list. The "compound titles" so created were preliminary to definite military rank and titles. They remained in vogue until June 23, 1898, when a warrant was signed that officers below the rank of Surgeon-Major-General should be formed into a corps. This was the Warrant for the Royal Army Medical Corps. Surgeon-colonel became colonel; surgeon-major, major; surgeon-captain, captain; surgeon-lieutenant, lieutenant.

It was only in the year 1898 that compound titles, such as surgeon-captain, were abolished in the British Army, and all officers of the same rank placed in one grade. By that time many officers of the line had become less well-bred, and the medical officers better bred, so that coalescence was natural; but it was the year 1918 before the last distinction was finally removed, and surgeon-general became major-general. As a further sign of complete equality, the blue gorgets and cap-band were exchanged for the red of the general staff in corresponding grades.

The work of the medical services in time of war is directed towards the prevention of sickness, the maintenance of health and strength; it has equally the important task of caring for the sick and tending the wounded. These duties so varied in their nature, demand a division of the service into special units, which operate from the most remote base, along the lines of communication, in the battle area up to the most advanced trench, and even forward of that in time of attack. These functions are concerned with the hygienic and sanitary conditions of all places occupied by troops; the quantity and quality of food, its storage and preparation; the potability and purification of water; the personal cleanliness of troops and the means to achieve it; the sufficiency of clothing and its disinfection; the inoculation and vaccination of troops; the segregation of infected troops; the erection of sanitary appliances,—latrines, garbage pits, and incinerators; the disposal of excreta and waste products, and even the burial of dead animals. To all this is added the collection of the wounded, their immediate care, evacuation, and treatment to a conclusion.

This immense range of activities penetrating into the remotest area of operations demand the most concerted direction and the most delicate control. Upon arrival in England, the Canadian medical service found itself without final direction and without ultimate control. This dilemma it shared with the whole Canadian Expeditionary Force. The War Office upon request detailed a divisional commander, Lieut.-General E. A. H. Alderson, C.B., and three staff officers, one of whom, Captain J. H. MacBrien,—afterwards Major-General, C.B., C.M.G., D.S.O.,—a Canadian, was attending the staff-college at Camberley; but these officers were not informed of the source of their authority or the power which gave them being, whether it

was the War Office or the Canadian Government; the Commander-in-Chief or the Canadian Minister of Militia; the Colonial Secretary or the Canadian High Commissioner. These exalted personages themselves did not know, and the problem was too hard for a mere soldier.

On the departure of the 1st Canadian Division for France, the command of the Canadian military forces in England was given by Militia Headquarters to Colonel (afterwards Major-General) J. C. MacDougall, C.M.G., his duties being shortly afterwards defined as involving responsibility to the militia department, in so far as it affected the troops in England, "for all appointments to the force, for the training and discipline, and all other matters pertaining thereto, including stores and equipment."[4] In the meantime, Colonel J. W. Carson (afterwards Major-General Sir John W. Carson, C.B.) had been appointed under authority of the Privy Council, to act "as the agent of the Minister of Militia in maintaining the depots of articles of equipment and other supplies necessary for the upkeep and subsistence of the Canadian Expeditionary Force both in the United Kingdom and at the seat of war."[5]

Although the functions of Major-General Carson were strictly limited and those of Major-General MacDougall were on the other hand very comprehensive, in actual practice greater power rested with Major-General Carson, and a remarkable division of responsibility developed over the administration of the Canadian troops in England and in a lesser degree of the troops in France.

In respect to the training of troops, Major-General MacDougall, in addition to his responsibility to the Department of Militia and Defence, came under the orders of the General Officer Commanding in Shorncliffe, and of his superior officer in the Eastern Command. Through them

he was responsible to the War Office. In matters of organization he received orders from the War Office, sometimes direct, sometimes through his superior officer at Shorncliffe, and despatched reinforcements to France under instructions from these sources.

At the same time Major-General Carson had speedily assumed, with the tacit approval or by the unofficial instructions of the Minister of Militia, the position of a Deputy Minister, and became in fact—though without any governmental extension of his powers—the Personal Representative of the Minister of Militia. He had direct access to the Minister, and was in constant communication with him; he was the medium through which the Minister's instructions or wishes were usually conveyed to the War Office or others concerned. The Minister, from Ottawa or during fleeting visits to England and France, sought to exercise a very close control over matters pertaining not only to the troops in England but to the Canadian Corps in France; and policies were framed and appointments made which affected the Corps, often without consultation with corps or divisional commanders or in direct opposition to their expressed advice, as well as against the opinions of General Headquarters. Friction was sometimes avoided only by timely surrender on the part of the War Office and General Headquarters against their better judgement.

At that time the system by which reinforcements for the Canadian Corps were supplied appeared to be inefficient, clumsy, and financially extravagant. Battalion after battalion of infantry, besides medical and other units, to an eventual total of 258 were raised in Canada complete with a full establishment, only in the majority of cases to be disbanded on arrival in England, and the personnel absorbed into reserve battalions. Yet it must be remembered that enlistment into a specific battalion, suffused with the spirit of the place and the personality of the officers,

appealed to men who went unmoved by the prospect of merging themselves in a general Depôt Company. One natural consequence of this policy was the accumulation in England of a large number of senior officers, very few of whom could be employed in France or given fresh appointments in England. They were drawing pay without any adequate return in service, and some were much embittered by their compulsory idleness.

This system of administration of the overseas troops remained unchanged until September 28, 1916, on which date was formed by the Minister of Militia, without authority of the Cabinet, and even without reference to the Prime Minister, an Overseas Sub-militia Council, with headquarters in London, to deal with matters affecting the Canadian Corps as well as the troops in England. The Council was composed of officers who with one exception had had no experience with troops in the field; and it was not surprising that the collective decisions of this body of officers provided an even more unsatisfactory system than the one which it was designed in part to replace. At the same time General Carson was operating an establishment of his own.

The Government at length became convinced that the administrative system overseas was impossible. The patience of Sir Robert Borden was great but not infinite. On November 1, 1916, the decision was taken to appoint a Minister in London, who would be independent of the Minister in Canada, save in so far as they were both responsible to the Cabinet. Sir George H. Perley was appointed to this post. The Minister in Canada was quick to see that this was an ominous sign of the end of his overseas regime. Then began that interchange of letters with Sir Robert Borden, which culminated in the resignation of the Minister on November 11, 1916.

Mr. A. E. Kemp (afterwards Sir Edward), was then appointed Minister in respect to matters pertaining to

Canada and the West Indies, and Sir George H. Perley was continued as Overseas Minister with full powers relating to military matters outside of those areas. The effect of this change was instantly felt in the Canadian Corps. The system of formulating policies affecting the corps or of making appointments without consultation with, or in opposition to, the wishes of the corps and divisional commanders was now at an end.

Major-General Sir R. E. W. Turner, V.C., who had commanded the 3rd Infantry Brigade and afterwards the 2nd Division, was recalled from France to take over, with the assistance of a war experienced staff, the command and administration of the Canadian troops in England. He was made entirely responsible for the training of the Canadian troops in England without the mediation of general officers of Imperial commands. The standard of training, equipment, and physique of reinforcements sent to France was made to conform with British regulations, and complaints from units in the field practically ceased.

The most vital reform effected by the new administration in England in agreement with the Canadian corps and divisional commanders was the inauguration of a territorial regimental system. Twelve regiments were formed on a provincial basis, each regiment consisting of a proportion of battalions in the field, reserve units, and a regimental depôt in England. This method was completed by March 10, 1917.

In the meantime the recruiting situation in Canada had been growing more and more difficult, with the consequence that the question of reinforcements was at the beginning of 1917 giving cause for anxiety. Every possible expedient was resorted to by the government in the effort to obtain men without having recourse to conscription, but so feeble was the response that it became evident early in 1917 that the military effort of Canada in the field would

have to be relaxed unless some compulsory form of military service was introduced. After a violent political struggle the Military Service Act was signed by the Governor-General on August 28, 1917, and was put into operation as soon as the necessary arrangements could be made.

It was not, however, until the spring of 1918 that its effects were evident in a steady flow of reinforcements across the Atlantic. Before this time, General Turner had been compelled in his endeavour to keep the ranks filled to return casualties to France directly they were pronounced fit, and without the enjoyment of that rest and leave to which their services entitled them. The disbanding of the 5th Canadian Division and the employment of its personnel as reinforcements and a rigorous elimination from offices and employed duties of every man who could possibly be classed, under a reduced medical standard, as fit to serve in the field, were further expedients by which the incessant demands for men were met. The medical service sought no immunity for its own personnel, but yielded to the combatant forces 1,883 men.

It had been announced at Ottawa in an official statement dated December 12, 1917, that the total infantry reserves in France and England numbered 31,000 of whom not more than 16,500 were immediately available, the balance representing casualties in the convalescent stage and men undergoing training. In the same statement it was added that during the eleven months ending November 30, 1917, the total infantry enlistments were 22,487, against total infantry casualties of 119,541 for the same period.

On October 12, 1917, Sir Edward Kemp succeeded Sir George Perley as Overseas Minister in London, although he did not take up his new duties until December. Major-General S. C. Mewburn, at that time holding appointment as Adjutant-General, replaced him at Ottawa. This change was connected with an important event in the history of

Canada—the formation on the same day of the Union Government by a coalition of various political elements. Sir Wilfrid Laurier, who had given unfaltering support to the cause, believed that the cause would not be advanced by a coalition at so late a period. On December 18, this government was returned with a sufficient majority to ensure that the overseas forces would be fully supported by conscription, the voluntary method having been exhausted. In this result the votes of the soldiers who had been enfranchised by special legislation were skilfully employed, some 215,000 votes being readily cast for conscription as against 20,000 in favour of a system that failed to give them relief.

The principal change was the organization of an Overseas Military Council on April 11, 1918, similar to the Militia Council which had controlled military matters in Canada since 1904. The appointment of General Officer Commanding in England was abolished, Lieut.-General Turner becoming Chief of the General Staff, which was a new appointment. The council consisted of: the Overseas Minister; the Deputy Overseas Minister; the Chief of the General Staff; the Adjutant-General; the Quartermaster General; the Accountant General; with the Director-General of Medical Services and the Paymaster-General as associate members.

With the adoption of compulsory service in Canada recruits were passed into territorial depôt battalions and as speedily as possible transferred to reserve units in England, the period of service in Canada being reduced and training chiefly carried out in England where climatic conditions were more favourable, and discipline easier to accept.

[1] *Roll of Commissioned Officers in the Medical Service of the British Army.* June 20, 1727 to June 23, 1898. Colonel William Johnston, C.B. Aberdeen, 1917.

[2] Ibid. [3] Ibid.

[4] M.H.Q. letter 593-2-51 dated 17th March, 1915, to Brig.-General J. C. MacDougall.

[5] Privy Council Order No. 107, dated 15th January, 1915.

## CHAPTER XIII

### THE YEAR OF CONTROVERSY, 1916

The last six months of the year 1916 was a time of bitter controversy concerning that part of the Canadian medical service which was established in England. In reality there was nothing in the service to dispute about. The conditions were obvious to anyone who cared to look. On July 31, the Minister of Militia in Ottawa issued instructions to a newly commissioned officer in the Canadian militia medical service, who had served only a few weeks overseas, to "make an inspection of all the Canadian hospitals and medical institutions to which the Canadian Government in any way contributes and to report on his observations with any recommendations deemed advisable." It would be interesting to enquire into the mental process by which the Minister arrived at the conclusion that he had selected the proper person for so exacting a task; but that would be a problem in psychology. This official was designated "Special Inspector-General."

The investigation was prompt and thorough. A powerful committee assisted, and every member but one concurred in the description of the situation that existed. So obvious was the report upon the tactical position that the Director of Medical Services himself agreed with the general description, and concurred with only two reservations in all that was recommended. The Inspector declared on his opening page, "that his only motive was to ascertain if everything possible in medical skill and

nursing was being done for the brave men who had been wounded or become sick in fighting for the cause." He bore witness, " that medical officers and nursing sisters were discharging their duties in a most self-sacrificing and exemplary manner, and that their work was beyond all praise."

Any one who wishes to understand this controversy, and especially if he is compelled to pass historical judgement upon it, must study this Report in detail; and very few persons now living, even amongst those who feel free to entertain an opinion, have undertaken that labour. In form the Report is concise, free from ambiguity, and the main fabric supported by documents. The recommendations are carefully reasoned from the premisses set forth, without compromise, certainly without any sign of favour and not much of malice. The Report was not very helpful, however, as it contained no suggestion of any practicable method for achieving its counsels of perfection.

The Report falls under twenty-three heads. The first indictment was that many soldiers were arriving in England from Canada medically unfit, who should never have been enlisted. This charge was true from the very beginning of the war. Speed in passing troops overseas was the sole principle of mobilization. Physical fitness gave way to numbers, and the extemporized medical service in Canada was overwhelmed. The usual standards were cast aside as mere professional pedantry. The results were soon seen. Early in March, 1915, unfit men were being returned from England; and notice was issued in Canada that in future any recruit enlisted and subsequently found incapable of passing inspection in England would be returned at the expense of the officer who reported him as medically fit. This charge, it was laid down, would include the cost of passage in both directions amounting at least

to one hundred and twenty-five dollars. This order would compel a medical officer drawing two dollars and sixty cents a day to guarantee that a recruit was free from all defects which it was in his interest to conceal, and to ensure against all contingencies that might arise in the next few months. It was as if an insurance company were to compel a medical examiner to become responsible for the payment of all policies issued on his report without allowing him any share in the profits that might arise from favourable risks.

If this order had been taken seriously, no recruits would be passed or the medical service would disappear. Yet the unfit were being passed. A burden was placed upon the medical service in England, which it was never designed to bear. It was held responsible for the large number of unfit soldiers arriving from Canada. The medical examination of recruits is difficult or easy, and is in any case not a military function. It is difficult when the recruit is anxious to be passed into the service. He will conceal his ailments and defects. It is easy when he desires to evade his duty. In that case he will expose them with startling frankness.

In the early days when the war was looked upon as an interesting, if short, adventure, men came forward in eager abundance under the strange system of mobilization, and arrived at Valcartier after a cursory examination or none at all. There were signs of a hard winter in Canada, and in many places examining doctors were informed by civic officials that they would do well to pass all who applied and thereby secure for them transportation out of Canada. Late in 1915, men were still anxious to go overseas, and the examination of recruits was taken away from local medical officers and entrusted to central boards. Although the regulations were being made more stringent, in spite of all care the number of unfit men arriving in England was

large. An order was then issued in Canada that the officer commanding the unit and the medical officer concerned would be held accountable, and if gross neglect were proved they would be liable to dismissal from the service.[1]

The fault lay not with the medical service but in the casting aside of all military principles of mobilization. Within a few weeks soldiers were being returned to Canada on quite other than medical grounds. On November 17, 1914, the *Cambotia* sailing from Glasgow carried 38 "alien suspects." Their names appeared in orders as Waurynechak, Tabinski, Neuhofel, Korkajon, Botschenski, Belocki, Yoycheskin. Their next of kin were given as Howrylishyn, Akterran, Belocki, Broski, Schmeider, Korkajohn; and their place of birth as Turkey, Austria, Galicia, Schleswig-Holstein, and Germany.

Even in the second year of the war medically unfit men were arriving from Canada in such numbers that an order was issued by the medical service in England for the inspection of all drafts arriving in the area of concentration.[2] This order was based on the returns supplied by the medical boards, which were accurate and exhaustive. The medical officer in charge, Capt. F. W. Blakeman, exposed the situation in all its details by a report dated August 22, 1916. This medical officer showed that 56 per cent of the men on permanent base duty, and 56 per cent of the men discharged from the army had never been at the front. Of 2,670 soldiers regarded by the medical boards from June 12, to August 22, 1916, as fit only for permanent duty at the base, 1,340 had never been at the front; of the 1,452 total discharges from the army during the same period 816 had never been beyond England. These numbers were in excess of those who had served at the front. Their disabilities must have been obvious on enlistment.

More than half of these cases were under age or over age. In four months more than a thousand men were assigned to base duty whose average age was fifty years. Capt. Blakeman in his report insisted that "these were really local casualties when they reached England, if not at the time of enlistment." In it were cited cases of defective vision, chronic suppuration of the ears, chronic rheumatism, heart lesions, defective joints, tuberculosis, and asthma. In one month 120 boys were removed from the ranks, some of them being only 14 years of age.

Captain J. P. Harrison, the specialist in eye diseases at the Westcliff Hospital, furnished similar evidence; and even more striking is the testimony of Lieut.-Colonel F. W. Ernest Wilson, for he was at the time, July 3, 1916, Assistant Director of Medical Services at Shorncliffe, and his report was made to headquarters in that area upon a specific request of June 26. Lieut.-Colonel Wilson was an officer of high professional attainment and long experience in the militia. His report should have made some impression upon administrative action in Ottawa. He supplies a nominal roll from the Pioneer draft which arrived in his area on June 29. Of 239 men 45 or 19 per cent were unfit. One man was 72 years old; five were above fifty and three were under seventeen. In three months 172 men were discharged and 284 given base duty, whose average age was 49 years. Men were taken from hospital in Canada, embarked, landed in hospital in England, re-embarked, and returned. In one battalion were 59 cases of venereal disease which was contracted in Canada.

When the Minister took upon himself the burden of mobilization the military staff became to that extent surplus to the establishment; and the members were only too ready to exchange for official routine in Ottawa the interesting hazard of war. The medical service was depleted

and the examination of recruits was largely left in the amateur hands of local practitioners who were without the advantage of experienced control. This charge of unfitness, however, applies less markedly to the 1st Division and to the earlier formations of the 2nd Division. At that time men offering for enlistment were in excess of the demand, and selection was easy. As early as January, 1915, the supply showed signs of exhaustion, and commanding officers were in competition with each other for recruits. These officers in effect chose their own medical examiners who were governed by personal direction rather than by established standards.

If the Inspector had desired to be perfectly judicial and comprehensive, he might have explained that the examination of recruits in Canada was not a duty of "the medical institutions" in England upon which he was asked to report. It is little wonder the Director in England showed such alacrity in his concurrence with the indictment. The influx of unfit helped to make his position impossible.

The second and third charges were directed against the system of distributing Canadian patients to hospitals in various parts of the kingdom not under Canadian control. Upon this subject the Inspector had so definite a conviction that he omitted to mention that there was a contrary opinion, and possibly some justification of it. When Canadian patients left their divisional area in the field they proceeded by converging roads to a casualty clearing station, where they were bound to mingle with patients from the whole army, since a whole army is served by that unit. Likewise on their journey to the base in the ambulance-train, they were bound to lie with strangers; again in the hospital at the base, and once more in the hospital ship on the way to England.

To any inexperienced person it would seem quite feasible to sort out the patients and assign Canadians to Canadian hospitals established near the point of debarkation. Up to January, 1916, an attempt was made to follow this method, but as casualties increased they flowed into English hospitals in conformity with a new plan based upon practical and sentimental considerations. On October 27, 1916, there were in England 20,256 Canadian sick and wounded, of whom 9,272 were in Canadian, and 10,984 in English hospitals. The surplus of Canadian beds at the moment was only 1,812. If now the former policy of segregating Canadian patients had been resumed, 9,172 new beds would have been demanded, and there would not have been a single bed available for another casualty. To carry out the policy and provide for future needs twenty new hospitals would have been required with a capacity of 20,000 beds, ten of which would remain empty in readiness for casualties from the next battle.

There were certain other elements in the case which may have escaped the notice of an Inspector so newly arrived from Canada. Had they been called to his attention he might have been less insistent in his demands that Canadian casualties be confined to Canadian hospitals. At this time there were operating in England ambulance trains capable of carrying 8,412 cases on a single journey, and they were continually in use. On one day, July 6, 1916, from two ports 10,112 patients were distributed to the various hospitals. From July 3rd to 9th, 47,582 sick and wounded arrived, and 121,160 during the month. So well was the work done that only two deaths occurred on the ambulance trains amongst the first 500,000 carried, and six during the whole war amongst 2,600,000 distributed to the hospitals.

The early policy in the British service was to send English patients to hospitals in the vicinity of their homes, but in spite of the large numbers arriving it was often difficult to find a train load for one place; and it might be that no beds were available there. Further complications arose when the system was introduced of allocating cases to special hospitals where their surgical needs could be best supplied. The special classes arriving on one ship for various destinations exceeded twenty at one time. These special cases included those suffering from neurasthenia and nerve injuries, from wounds of the skull, heart disease, orthopaedic conditions, nephritis, injuries to the eye; jaw and face wound requiring plastic operations; cases of enteric, dysentery, and insanity; carriers of infective diseases; wounds of arteries and femur; burns and poisonings; and cases for discharge as permanently unfit. In addition there were many other categories, including nursing sisters, that required special distribution. This enumeration takes no account of Belgian sick and wounded of whom 57,000 were received in English ports in one year, nor of prisoners of war and other endless details.[3]

In time of peace in a civil hospital with a limited number of patients such a task is difficult; in the stress of war to have attempted to assign each Canadian, who might belong to any one of those classes, to a Canadian hospital would be to attempt the impossible. In any case, there were not the twenty special Canadian hospitals to which they might be assigned; there were not even enough Canadian general hospitals to accommodate all at any moment. Such a rigid system of segregation would have demanded ten additional Canadian hospitals, and even if personnel had been available there were not surplus buildings enough in England to house them, especially as these hypothetical hospitals would be empty during long intervals when quiet

on the Canadian front prevailed. Buildings and personnel were too precious to be wasted upon a system of which even the theoretical and sentimental advantages were at best presumptive and at worst illusory.

The Inspector, as he proceeded, came upon equally debatable ground, when he protested that Canadian patients were inaccessible to inspection, lost to sight after numerous transfers, detained in hospital when they should have been sent to Canada or the front, or assembled in convalescent camps, rather than in English hospitals, especially in those operated by voluntary aid. In his denunciation of these institutions the Inspector was unfortunate. They had arisen out of human sympathy in a moment of direst need.

There were at this time no Canadian convalescent camps to which patients could be sent; no hospital ships to bear them home. A year earlier, July 29, 1915, the Director of Medical Services at a meeting where the Premier, "the Personal Representative" of the Minister, and the Agent-General of Ontario were present, asked for convalescent accommodation for 3,000 patients. Ontario was appealed to, but that province preferred to build a primary hospital. Buildings or hutments were impossible to obtain; winter was coming; memories of Salisbury Plain were yet vivid. The Director-General of the British services being appealed to, gave notice that there was no large available space for Canadians, but they could be cared for as individuals by the voluntary aid detachments which had sprung to life in the hour of need. These voluntary hospitals were for the Inspector an easy object of comment. They were "merely dwelling-houses, small, isolated, without standard equipment," they were served by "young ladies," and attended by "civilian practitioners of middle age." The impression was conveyed that a large proportion of the Canadian wounded were immured in these

houses. In reality, the number of beds occupied at the time was 413 only, but his opinion was probably correct, " that there was a sympathetic tendency to treat the Canadians too kindly and to keep them longer than necessary in pleasant surroundings."

Blame was bestowed in that Canadian medical officers were being assigned to scientific duties in the Imperial service. British medicine has won its high place by individual effort and not by aid from any government, but in 1913 when the Insurance Act came into force a committee was formed for medical research. This committee was composed of nine persons who had achieved a reputation for organizing and prosecuting research, and for their purposes the sum of sixty thousand pounds a year was assigned. When war broke out this committee turned its attention to military problems, and its personnel was enriched by the addition of scientific minds drawn from Canadian and other sources for the common good of all. Capt. J. J. MacKenzie, a pathologist of exceptional renown, Capt. A. C. Rankin, Capt. A. W. M. Ellis, and Major J. C. Meakins, whose work won him a chair in the University of Edinburgh, were amongst the Canadians so honoured, and yet their assignment to this duty was made by the Inspector a ground for criticism of the Canadian service. The great English medical journals were freely open to Canadian contributors. The *Lancet* was always sympathetic; and Sir Dawson Williams, the editor of the *British Medical Journal,* made repeated visits to France to inform himself of the operation of the service in the field.

It was not so easy to convince Canadians of the propriety of sending medical units into areas where no Canadian troops were engaged. No. 1, 2, and 5, Stationary Hospitals had been dispatched to the Mediterranean, and this afforded a new point of controversy. A piteous and

moving letter to Major-General Jones from Sir Alfred Keogh, Director General of the Army Medical Service, silenced all but the most unreasoning criticism: "I had not any hospitals at the moment. I called upon you for assistance. You gave me hospitals. They saved the situation. They were good hospitals, containing good officers. I shall always be indebted to you for the help you gave me at a time when I was very hard pressed. The only alternative was to send home wounded in transports, which might have been sent to the bottom of the sea if you had refused the help I asked. You were quite entitled to refuse to send Canadian hospitals where there were no Canadian troops. I am very glad you did not."

The Inspector, after an investigation that lasted six weeks, issued his Report on September 20. To this the Medical Director issued a reply. Both documents were reduced to comparative abstracts by a practised lawyer, and on October 6, 1916, all was placed before a body in London, known as the "Acting Overseas Sub-militia Council". This body was largely composed of "business men," the term that was used in those days to designate persons who were infallibly wise in giving decisions upon subjects of which they knew nothing. The Report was approved, and the Council advised that the necessary reorganization of the medical service be made to give effect to the recommendations.

The Council then set forth formally that "whereas the investigation had already seriously interfered with the administration of the service under Major General G. C. Jones, the Council recommended that Colonel Herbert A. Bruce, the Special Inspector-General be appointed Acting Director in his stead". Upon this resolution a poll was taken. All the members approved, except Brig.-General Leckie who declined to vote. Possibly the resolution was

too strange and subtle for the mind of a soldier. The result of these deliberations was conveyed to Ottawa. The Minister approved. By formal letter he wrote to the Council, " Kindly give the necessary authority to Colonel Herbert A. Bruce, special Inspector-General, to proceed with the reorganization of the medical service, as recommended in his special report to me". Colonel Bruce accordingly began his great work. His first step was to transfer the title of acting director, which the Council had conferred upon him, to another officer " as a temporary measure until a suitable man could be found." Such a measure, and the use of such derogatory words may be ascribed to inexperience and lack of aptitude.

In the leisure of office, if the new director had studied the abstract of the two Reports, his own and his predecessor's reply, prepared for the Council by the Deputy Judge-Advocate General, he must have been astonished to read that of the fourteen recommendations he had made, his predecessor concurred in eleven, partially concurred in one, concurred in another apart from the expense in carrying it out, and disagreed with only one. From this it appears that General Jones was conversant with the whole situation. In his reply he explained the difficulties in the way; and with the curious irony of events the new Director encountered those very difficulties in the task which he undertook so bravely.

On November 20, he complains bitterly, " All I can do is to make known the requirements to those in authority over me, and to suggest the most effective way of carrying them out, leaving to those authorities, whose province it is, the duty of taking the necessary steps." At this time he also records the discovery—a mistaken one—that " the whole matter of providing hospital accommodation is in

the hands of the Quartermaster-General". This experience is not unique. There is nothing in the army so difficult for an officer as making his superiors perform their duty.

In spite of his good intentions, the new Director found himself roughly taken to task for failure to have those matters settled, which he had already explained were no affair of his—after he had made a report upon them. In his own defence he was obliged to write on November 20, to the Overseas Minister, "that he had repeatedly and vainly brought them to the attention, both in writing and verbally, of the Sub-militia Council and the responsible heads." He protests that action on his part was not delayed, but that on the contrary he had placed the matter before the Sub-militia Council on four separate occasions,—the same Council which had judged so sapiently between himself and the previous incumbent. Again he is writing direct to the Overseas Minister, who recommends him to operate through the usual channels. He was obliged to confess that after writing letters since August 26 at " the present moment the venereal situation is most serious and is becoming more so." Indeed he is more critical of the service under his own direction than he was when it was under his predecessor.

Within a month of assuming office he was writing: " Administrative work of this character is distasteful to me." Inspection, criticism, and reporting was much easier. Administrative work is distasteful to all soldiers, but they do it. The irony of a soldier's life is that he enters the army to escape from books, and if he succeeds, the remainder of his life is spent amongst files which are books of the most desolating kind. When a military board was called on November 16, to review the Report he had made, he cabled to the Premier protesting against its membership,

and asking to be relieved and sent home. To this request no answer was received, which was a sign that a new system had come into being. He was relieved of his appointment, December 30, 1916, and General Jones was reinstated in his stead.

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[1] M. & D. Memo. European War. No. 3, p. 21.
[2] A.D.M.S. Order No. 394 of March 9, 1916.
[3] *British Official History of the War, Medical Services General History*, Vol. 1, pp. 102, 105.

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## CHAPTER XIV

### THE VINDICATION OF THE SERVICE

There has always been a tradition in the Canadian mind, that Canadian medical schools, medical profession, and medical practice were the best in the world. When war broke out it was a natural inference that out of this material could be constructed a medical service that would be the best in the army. There was ground for the belief. The medical units that went to Valcartier were near to completion in personnel and training.

It was a natural assumption that Canadian soldiers would receive the full and exclusive benefit of this excellence. When it was discovered that Canadian sick and wounded were being tended in English clearing stations, in English hospitals at the base, and in English general hospitals in England; that the sick and wounded from the English and other Dominion forces were being cared for in Canadian hospitals; that Canadian units were operating in the Levant and in France where no Canadian troops were engaged; and finally, that Canadian medical officers were detailed to the English service, and English officers to the Canadian service,—the situation was beyond comprehension, and caused a shock of bewilderment in the Canadian mind, unfamiliar as it was with the exigencies of war.

An army is like a living being in that it is composed of many organs which must do their specific work; and if one fails, all fail. The army is a complicated concern,

and the medical service is the most complicated part, since it operates from the front line to the remotest base, and follows the soldiers into civil life again. According to the function it is performing at the moment its responsibility varies, and it draws its existence from many sources.

Its main duty is the care of the sick and wounded, and the preservation of the health of the troops. The means by which that duty is performed: the provision and administration of hospitals and convalescent depôts, the supply of medical equipment, the readiness of hospital ships for invalids,—for all this the adjutant-general and quarter-master-general are responsible. It must look to the general staff for orders governing tactical dispositions; to the director of ordnance services for clothing, equipment, and stores other than technical; to the director of transport for all general vehicles.

It is the Inspector-General of Communications—not the medical service—who selects, appropriates, and allots sites and buildings for hospitals; and it is an administrative commandant responsible to him, who is charged with the discipline, sanitation, and interior economy of the hospitals within his area. When a sea-base, like Boulogne, is concerned, the medical service must operate with the military landing officer in conjunction with the director of sea transport. It is they, not the medical service, who carry out the requirements of the commander-in-chief as to the evacuation of the wounded and the sick.

For two years there had been in England no regular Canadian staff through which the medical service could operate,—nothing but a sub-council and a "personal representative" of a Minister whose mind must be sought across the sea upon matters of which he could not know enough to enable him to frame a reasoned decision.

The people of Canada were not instructed in these technical affairs; indeed the knowledge was concealed from the Special Inspector-General himself until after he had assumed the office of Director; but the people were in a keen temper. They had given of their sons and their other treasure without stint. At this moment chosen extracts from his Report appeared in the newspapers and produced the utmost consternation. The Report was endorsed "confidential, for official use only," and if it had been so employed it would have fallen into the category of those official and confidential reports which are continually being made in the army, and are the foundation for all improvement in every arm of the service. But the report was not so used. It was wrested from its design, and made to serve a different purpose. It was used in support of an attack upon the medical service, upon the army, and upon the government. The Minister coming to the rescue of his Inspector did him irreparable damage in assuming that any such attack was his chief intent.

But when his Report was removed from the category of confidential documents by which every Director guides himself, and became public in parliament and press, a scrutiny of sinister eyes soon disclosed what they were seeking. It was not written in terms of nice precision; it yielded phrases which, if exhibited by themselves, only too readily assisted the enemies of the government. He found Canadian soldiers "asking and begging" to be removed from English hospitals; medical officers "complaining;" "errors of diagnosis and treatment;" "unnecessary surgery;" "soldiers dawdling in hospitals;" operation performed "as a private hobby;" "a good deal of the surgery bad;" ladies "deploring the conditions;" "operations poorly performed;" "no supervision of treatment in English hospitals;" "worse since operation".

In every medical service, even in the most select private hospitals, isolated cases will be found to justify adverse comment, and the management will be pained to hear of their existence. But the Inspector went too far, or did not go far enough, when he wrote formally, "that many of the officers who have been given commissions are drug fiends or addicted to alcoholism." In the whole Canadian army during the period of the war there were amongst all officers in all arms only 29 cases of alcoholism, one of addiction to other intoxicants, with no deaths, and 27 cases of insanity. And these officers lived under the continual eye of medical men who were trained and ruthless to discover such cases. During the period of the war only twelve Canadian medical officers were struck off the strength by action of court-martial, and seven as absentees; there was only one case of arrest for malfeasance, but the facts in this case were never fully disclosed as the officer during detention died probably by his own hand. In respect of the purely routine procedure of medical boards, the Inspector allowed himself to use the fatal words, "failed to an almost criminal degree." Henceforth his words carried less weight.

He soon found himself the unwitting protagonist of all persons who were discontented in Canada. His Report was discussed in parliament, and casual references were magnified to damage the service and destroy the government. The ex-Minister made it his own after his retirement, and amplified obscure expressions to less delicate form. The Government then was forced to subject the Report to a severe scrutiny; and they were more concerned to prove it false than to discover what was useful, and so destroy the superstructure of falsehood that had been erected upon it.

A board of officers was summoned. The procedure was simple but ominous. Under date November 16, 1916, a

letter was addressed to the Adjutant-General and signed by Sir George H. Perley who subscribed himself Minister of Overseas Military Forces of Canada. The personnel of the board was given. To it was referred the Report and Reply. The board was to return a finding as quickly as possible on the criticisms made; as to whether they were justified, in whole or in part; on the recommendations made, as to whether the board endorsed and concurred in them; and if not, the board was to say in what respect it differed and the reasons therefor.

Evidence was to be taken under oath, and it was considered essential that the two successive heads of the service should be heard. The War Office, as usual, promptly approved; but in the terms of reference[1] the customary word "confidential" was employed. Sir George Perley was quick to explain that he understood the term to mean "confidential within his own discretion," and that the results could be "used publicly if so desired." He was informed that such was the correct interpretation.

The board was constituted as follows: Sir William Babtie, Colonel E. C. Ashton, Colonel J. T. Fotheringham, Colonel A. E. Ross, Lieut.-Colonel J. M. Elder. As soon as the names of the board appeared in orders, the acting Director sent by cable a message of protest to the Premier at Ottawa. His objections were that the board "was headed by an Imperial General"; and that "three of the four other members were on duty in France from the beginning, and unfamiliar with conditions in England," although he paid to them the tribute, that their "services were a matter of pride to every Canadian." To this message no reply appears on the records. It is not unlikely that the Premier supposed that these officers would be all the better coming from the wholesome air of France.

To the Minister in London the acting Director protested specifically against Colonel Fotheringham, on the ground, "that he had openly and bitterly expressed himself, and placed his attitude definitely on record." Colonel Fotheringham, who was in command of the medical service of the 2nd Canadian Division and had earned for himself amongst the troops the precious and loving sobriquet of "honest John," on November 18, issued in his routine orders to those under his command an admonition against despondency over the dissensions in London. "The high standing of Sir William Babtie, and his distinguished services in the various appointments he had held in India and the Mediterranean," the acting Director thought, "entitled him to the respect of the members of the profession," although at a later period he appears to have reversed this good opinion. But he was afraid lest the training of Sir William Babtie in the Army would prevent him from taking the proper view of "a civilian force such as Canada has sent." And yet even the benighted Germans appear to have understood perfectly well that this "civilian force" could not be distinguished from a real army. An interminable correspondence followed, all of one tenor; the acting Director protesting that the scope of the enquiry should be enlarged beyond the boundary of his Report, and the Overseas Minister recommending him to place all the information of which he might be possessed before the board.

Within three weeks this board of officers performed its duty and issued a Report. The primary segregation of Canadian sick and wounded was considered "not only impracticable but unwise, and impossible." The board was "in profound disagreement with the view that Canadian Army Medical Corps personnel should not be associated with the British service in scientific enquiries and in other work." On the contrary, it was of opinion "that such

participation is both desirable and necessary in the best interests of the two services." The board " was at variance with the contention that the Canadian Army Medical Corps should in the main be confined to Canadian troops." They felt " bound to place on record that in some of the opinions expressed by Colonel Bruce he was misled by a lack of intimate knowledge of army organization." The board was " abundantly satisfied that the Canadian sick and wounded have been thoroughly well cared for in the voluntary aid hospitals . . . . comfortable, happy, and at home." They believed the criticism of those institutions was " unjust and undeserved." They did not believe that a reorganization " from top to bottom " as recommended by Colonel Bruce was necessary, and they thought the changes he suggested would not remedy the defects he deplored. The board completed a general review by noting that " the good work done by General Jones and his staff in circumstances of novelty and great difficulty had been ignored." They " did not hesitate to criticise; but they did so with great reluctance, satisfied that much of what had been accomplished was the result of his zeal and industry ".

This memorable document came to be known as the " Babtie Report," although it was really the product of a Canadian board appointed by constituted Canadian authority, presided over by an officer whom the War Office had been asked to nominate. Sir William Babtie was accepted as president. Before the inception of the enquiry he was unknown to any of the committee, to the Special Inspector-General, or to Sir George Perley; and his relation to General Jones was " slight and formal." He was therefore enabled to approach the subjects of enquiry with an open mind and without predilections. He was responsible only that the circumstances should

be adequately investigated, and that the report should be full and just. The report was unanimous, and it was expressed in terms of studied moderation. It is a thing in itself, and does not depend for its validity upon past events, real or fancied, in the career of the president. The former Minister of Militia also thought rather well of the members of this committee. "Colonel Ross," he considered, "deserved the Victoria Cross a score of times while he was at the front; Fotheringham—a first class fellow; and Elder one of the best men from McGill College." Of "Dr. Babtie" he was doubtful; he feared "he was behind the times."

Sir Robert Borden in Parliament[2] amplified this eulogy, and supplied what was wanting in respect of Sir William Babtie. He was a graduate of the University of Glasgow, and entered the service in 1881. During the occupation of Crete in 1897, he served as Senior Medical Officer, and received the honour of C.M.G. In South Africa he was on the staff of the Natal Army, and was present at all the actions for the relief of Ladysmith and subsequent operations. He was mentioned in despatches, promoted to be Lieut.-Colonel, received a medal with five clasps, and was awarded the Victoria Cross. After holding many administrative posts he was appointed in 1913 Director-General of the Medical Services in India. At the time of his appointment as president of the Canadian board he was Director of Medical Services at the War Office.

In the Canadian Parliament on July 27, 1917, Sir Sam Hughes, who in the meantime had resigned his ministry, using the form of question to imply an affirmative, desired to know if "the Babtie who was the head of the Commission is the same Dr. Babtie who was involved in the notorious scandal in connection with the British medical service in Mesopotamia, and who has since been practically relegated from the service". Those events ascribed to the

president by which it was sought to discredit the Report never occurred. They centred around the failure of the medical arrangements in Mesopotamia after the battle of Ctesiphon, which was fought November 22, 1915. A parliamentary commission was appointed to enquire into the management of the campaign. Report was made 19th May, 1917, and the conduct of Sir William Babtie was impugned. His reply to the allegations made by the commission was submitted to the Army Council, the body to which Parliament had referred the cases of all military officers animadverted upon. The result was that the Under Secretary of State for War announced in the House of Commons: "On account of the reference to Sir William Babtie in connection with the enquiry of the Mesopotamia Commission, his case was referred to the Army Council who, after full consideration of all the facts decided that the explanation he had been called upon to offer was satisfactory in all respects."[3]

Sir William Babtie never was in Mesopotamia. It was only during the earliest phase of the campaign that he was Director General of Medical Services in India. He had left India six months before the occurrence of the events which were laid to his charge, to take up the principal medical appointment in the Mediterranean. He had arrived in India only four months before the outbreak of war, and left on June 2, 1915. Up to that time the campaign had been confined to the occupation of Basra and the oilfields, that is, south of the line Karna-Ahwaz, and no extension of operations was contemplated. It was never alleged that the medical arrangements in this field were inadequate. The move up the river to Amara was not even sanctioned in London until May 23, 1915; the advance upon Baghdad was not made until September; and it was late in November before that failure occurred, which is

alleged against Sir William Babtie for the sake of discrediting his Report. The slander was widely circulated in Canada. It was published in the House of Commons. For its truth the authority of a dubious London newspaper was formally evoked, whose editor Sir Chartres Biron afterwards declared from the Bench he would not believe under oath.

This " Babtie Report " by reason of the facts adduced, the arguments supplied, and the judgement delivered by experienced and powerful minds will remain as an authentic historical document upon which rests the vindication of the Canadian Medical Service.

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[1] W.O.L. 121. n. 2893. A.M.D.I 25th Nov., 1916.
[2] Hansard, February 6, 1917, p. 559.
[3] Hansard 17th June, 1918.

## CHAPTER XV

### THE CIVILIAN AND THE SOLDIER

The Special Inspector General in himself was not unimportant; but it often happens that a well-meaning person becomes involved in the stream of history and is carried along quite irrespective of his own will or desire. He held a high place amongst operating surgeons; he was professor in a great University, and member of many academic bodies. He joined the militia as a lieutenant-colonel whilst the war was in progress; he had served overseas for a few weeks in two general hospitals, but he had never looked war in the face, or witnessed that spectacle of a stricken field, which alone can transform a civilian into a soldier. At no time did he give enough indication that he even surmised the existence of a service at the front. The date of his appointment, July, 1916, was the moment when that service was preparing to leave the bloody fields of Flanders for the still more bloody Somme.

Later in that dreadful season, when he was appointed acting Director, the medical troops were returning from the Somme, sore from their losses and in a bitter mood. Whether he knew it or not, he had now complete authority over those troops. He had attained to a place of extraordinary power—in appearance at least. He was arbiter of the fate of every officer and man in the service; he could condemn one to the front trench, and relegate another to the ease and security of an English country

house,—in theory only, for many an officer declared that rather than yield to so ambiguous an authority he would revert to the ranks and carry an honourable bayonet. The unity of the service was destroyed. The part in England was severed from the part in France. The sphere of the new Director was bounded by the channel. On reflection a mild curiosity was manifested at the front, and some amusement; but under that smiling surface was an unexpressed fear of what a Minister might do, who was capable of making such an appointment, and apprehension for a government and country that could permit it.

War can be carried on by civilians against civilians, as in Ireland and in the American Civil War. War can be carried on by soldiers: not by civilians and soldiers in the same army. A war by civilians against soldiers has only one issue. The civilian must be converted into a soldier, and in the Canadian army that conversion was extremely rapid and sincere. A civilian was now director of the medical services, but the front was not in reality disturbed. Every one knew that his orders would not cross the Channel, or would lose themselves in that maze with which the soldier has learned to protect his cause, and is so mysterious to eyes that have not seen. Innocent majors of yesterday began to arrive at the front to superimpose themselves upon captains having eighteen months service in the field. They were attached for training and discipline or assigned to useful, and harmless, routine duties.

In any subject of controversy the opinions of persons who are qualified to express an opinion are valuable. Sir William Osler resigned his position as consultant to the military hospitals in England, "as a protest against the method of procedure in the recall of General Carleton Jones by the Canadian Minister of War." He refused to

withdraw his resignation, as he felt that "the late director was treated disgracefully in the appointment of the committee of investigation." The ground of his objection was that a committee had been appointed from the director's subordinates and without consultation with him; he suspected from the names of the committee that there was an animus against the director; he thought the procedure "unfair." Finally he wrote to General Jones' successor: "I am wiring Hughes. I cannot believe that he would do a thing so contrary to all law and custom. If he has, I am extremely sorry he has drawn into it a man of your position." One last word from Osler: "Have just had a message that Jones has been recalled, and you have been appointed. So sorry for you." (Oct. 15, 1916).

The historical charge against the Special Inspector-General is not that he presented a Report, even if it were devoid of accuracy in certain details, but that he joined in the public criticism in time of war against an essential service of the army, which was based upon a partial and imperfect reading of that report. He was betrayed by his friends who published the information conveyed to them in official confidence. He could have protected himself by a dignified silence, and as a victim of political manoeuvre he would have won regard. He chose to follow a contrary course. Henceforth his army career was that of an officer with a grievance, who is avoided, since in the army every man has so many grievances of his own,—which, if he is wise, he will forget or keep to himself,—that he has no ear for any other tale of woe. Even after the war was over he published a book which repeated all the inaccuracies and some of the animadversions in the original Report.

The very term "Inspector-General" was an offence; the addition of "Special" made it more so. This is a

designation reserved for an officer who is hardly second to the Commander of the Army. The term "Inspector-General of Hospitals" was first applied in the British Army to a nondescript official in the year 1795, but only three appointments were made, and the title was formally discontinued after the year 1804. It was revived in 1830, but was not to be attended with any additional expense to the public. In 1904, an Inspector-General of the Forces was created, and in 1907 an Inspector of Medical Services was placed upon his staff; but in 1909, he was transferred to the department of the Adjutant-General, so that his activities could be co-ordinated with those of the medical service itself. It had never occurred that a subordinate official should report upon a service direct to a Minister and not through the usual military channels. Such conduct would have been subversive of all order.

In the end Colonel Bruce found himself in a situation where he, least of all, desired to be. His sincere purpose to reform the service was mistaken in design. In his short hour of greatness all those in the service who were discontented called themselves his friends. His final successor, General Foster, was considered by contrast something less than cordial. But any dryness of demeanour on his part towards them was due not to that former friendship of theirs, but to the motives and qualities through which that friendship was established. The breach between the old and the new was never completely healed, and a spirit of criticism dogged the service until the end.

During that troubled period the service did not break down. It continued by force of its own inertia, and was carried along by the general army administration; the routine was directed by Colonel Murray MacLaren and the staff at headquarters in London, which had something of permanency. The delicate operation of the movement of

personnel was conducted by Colonel C. A. Peters under three successive heads. For this duty he had been brought from his command of a Field Ambulance in France. In April 1917 he exchanged posts with Colonel H. A. Chisholm, and returned to France with promotion, as assistant director of medical service in the 4th Division. Apart from the changing directors his task was one of unusual difficulty. He could not so much as transfer a captain without the sanction of the "personal representative" of the Minister up to the time when that anomalous office was abolished.

When General Foster left the field for London in February, 1917, to take command of the medical services, he found some amongst the higher grades of the personnel infected with a spirit of criticism. He came in contact, and in contest, with men who were more learned than himself in the lore of disease, more skilled in the technique of surgery, and much more practised in the bedside art of suavity than his assistant; but physicians and operating surgeons, whose vision was commonly bounded by the white walls of the theatre in a civil general hospital or even by the larger horizon of the faculty room of a university, but now wearing the uniform and flashings of a colonel, were quick to discover that they had much to learn from men who were themselves masters of military method and medicine, who had looked war in the face, and had taken a distinguished part in the dreadful and impassioned drama of war.[1]

The principle that animated the conduct of the Inspector-General, and of the Minister too, was civilian administration of a military force. The recognition of this principle elucidates much that would otherwise have remained obscure. The idea of introducing a civilian element into the administration of a military organization is not new. An advisory board for the English medical

services with four civilian practitioners was constituted in 1902, but the extent to which this board should exercise administrative control was never clearly defined. This ambiguity remained to the detriment of the service until the year 1907, when an "Army Medical Advisory Board" was reconstituted with clearly defined functions. It was only to advise on medical, hospital, and sanitary matters; but it would take no administrative action. As long ago as 1885, this idea of civilian control had been examined by a Select Committee and was rejected. The method had been employed on many occasions, and always ended in disaster, as on the occasion of the Walcheren Expedition against the French in 1809, which landed 40,000 strong under Chatham, bombarded Flushing, failed to take Antwerp, and retired from Walcheren with heavy loss.

This controversy did not end with the war. It was carried into the medical profession after the war was over. At the meeting of the Canadian Medical Association held in Quebec in June, 1919, a committee was appointed "to formulate suggestions for efficiency in the medical service." An interchange of ideas was effected by correspondence, and the resulting report was presented at the Vancouver meeting in the following year. It was referred back to the committee with a direction that no action be taken with the report until it should have been passed upon by the Association a year hence. The end came at the Halifax meeting in June, 1921, when the subject was dismissed.

This scheme for the reorganization of the medical service was published in the official Journal of the Association in June, 1921. The design was to create a semi-civilian body having a half independent existence, rather than a corps which should be an integral part of the army. It was recommended that a board of consultants be established, and "assume its duties forthwith," and that its first duty

should be " to formulate a general scheme of preparedness of the medical services." The board was to be composed of " medical practitioners of outstanding ability and reputation in all special departments who shall organize, direct, and control all professional matters, including the allocation of the medical duties of the officers selected for service," and the decision of this board was to be final except for stated reasons of an administrative character satisfactory to itself. As if those duties were not sufficiently ample and complicated, the allocation of nursing sisters was to be under the control of this consulting board.

A course in military medicine was to be established in each medical college in Canada, and a complete conspectus of such a course was set forth, although the committee did not disclose the method by which the consent of the universities was to be won. The Government was to be asked to establish scholarships in military medicine; competitive examinations for entrance to the service were put forward as an innovation. In reality such examinations had been instituted eight years before.[2] Successful candidates were to be considered on probation for one year, and not for the present period of three years.[3] At the end of that year, and before being admitted permanently into the service, candidates were to take a course of at least six months in some special institution. Such an arrangement had been in force for fifteen years, and at least eighteen members of the permanent corps had already availed themselves of the advantage.

It was not suggested who these " consultants " were to be, who was to appoint them, or the principle upon which the selection was to be made. No provision was made for their training in their new way of life. It was not even specified what a " consultant " is. Any medical practitioner may proclaim himself to be " a consultant," that is, a person

who may be consulted; but no one is compelled to follow the advice he has received; and within the profession it is well known that upon the question of "outstanding ability" there is often a marked difference of opinion. In every medical faculty, in every large community, there are persons who profess to have acquired special skill in the various departments of surgery and in the treatment of certain diseases; but one might have all skill in opening a cavity, in setting a bone, in repairing an organ of the special senses, or watching a fever, and yet be quite incompetent in the wide field of human activity, known as war, that lies beyond his ken.

Even in the narrow range of the faculty practitioners of medicine are not remarkable for discernment of talent in others, for freedom from prejudice, passion, self-interest, and self-will. And yet the country was gravely asked to entrust an important arm of the service to their inexperienced hands and their untrained minds. No "consultant," unless he were a confident fool, would undertake the task; and consequently under this proposal the task would be left to a board of confident fools.

The scheme was merely a civilian proposal to revert to the old practice of separating the medical service from the Army, even to revive the old names which marked its inferiority at a time when the breeding and manners of the "officer" were better, and the breeding and manners of the "doctor" were worse than they are now. The old titles, surgeon-captain, surgeon-major have disappeared; and it was proposed to renew the stigma in the form of surgeon-general, which is not a military title nor an indication of substantive rank.

And the officers of the permanent cadre were to exercise purely administrative functions, presumably to carry out the orders of an amateur board, ignorant of military

procedure, tactics, or operations. The truth is, these officers by long training are themselves consultants in military medicine, which is vastly wider, and for purposes of war much more important than special knowledge in some department of civil medicine. Complaint is sometimes made that military medical officers are not eminent practitioners in all branches of medicine; and yet a specialist always makes it a boast that he knows so little of any department save that which he has made his own that another specialist must be consulted.

History is something more than a manual of dates and a store of facts. These must be displayed with a design that they become a subject of meditation; they must be followed where they lead. In the present case they led into parliament, and parliament is not beyond the ken of history, especially of a history which parliament itself has ordered to be written without restraint. Historical and political issues cannot be dissevered from the persons concerned in their creation. The historian is to disclose the issue, leaving the persons by their words and actions to disclose themselves.

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[1] *The Principles of War*, trans. 1920. Marshal Foch.
[2] M.O. No. 281 of June 2, 1911.
[3] K.R. and O. Canada 1910. para. 156 and 1917. para. 182.

## CHAPTER XVI

### THE SERVICE IN PARLIAMENT

The medical service was selected by the Minister as the ground of his struggle for control of the army. Upon that ground he fell. A history of the medical service is therefore compelled to notice the event not in scattered references but in well-studied narrative.

This proposal to segregate Canadian patients in Canadian hospitals was the immediate incident which caused the extrusion of the Minister from the Cabinet. In itself it must appear inadequate. The further explanation is that the measure was part of his general policy to segregate as completely as possible the whole Canadian Corps from the British Expeditionary Force. In this the Minister miscalculated the complaisance of his colleagues and the temper of the army, for an army has a temper of its own.

After nearly two years Canadian soldiers had come to consider themselves partakers in the tradition of the British Army, a tradition which their own ancestors had helped to create. The fields of Crécy and Agincourt were under their eyes; and Waterloo was not far within the haze of dust and smoke, which set but temporary bounds to their advance. These soldiers discovered to their surprise that the little Island in which at times they found themselves was the home of their own race. The years of their exile fell away, and they came under the domination of the ancient spell cast by the genius of the place.

In the remotest hamlets of England, Scotland, and Ireland men from over every sea might be discovered searching in parish registers and even upon fallen tombstones for names which were their own.

They were close observers of war, and they were quick to discern that the attempt to administer the Canadian overseas forces from Ottawa had failed. The uniforms in which they sailed from Canada, the boots they wore, the equipment they carried, the very arms in their hands had long since been discarded; and they now stood in the uniform of the British Army. They had also the sense that Canadian accoutrements had been too hardly pressed upon them. They had freed themselves from their Canadian rifles with a thoroughness that will never be understood until the Ypres canal and the Dickebusch lake give up their secrets. They rearmed themselves with rifles taken from their dead English comrades, and found themselves faced with an order which laid them open to the charge of theft.

The troops were fully informed of the situation in Ottawa. The Canadian *Hansard* was not barred from the mails, and copies were passed from hand to hand. Sir Robert Borden was protesting continually and correctly that he was "not a military man." With that scrupulous loyalty to colleagues which marked his whole career he placed full reliance upon the Minister of Militia, who in virtue of that position had imputed to himself all military knowledge, and was allowed to assume the double rôle of Minister and commanding officer. With an excess of sentimentality the Minister in regard to the soldiers assigned to himself the relation of "a father" to his "boys." These soldiers of the King were not his "boys"; nor were they the "lads" and "laddies" of the newspapers. Still less were they the contemptuous "Tommies"

of the superior civilian. The slightest contact would soon impress a sensitive mind that they were men with all the self-respect and passions of men. An officer who failed in that perception did not last long.

A soldier gives his life without reserve; but he reserves to himself his inner life inviolate. It must not be so much as mentioned. The sphere of the superior officer has rigid bounds; and even the English professional soldier quickly learned that he must not catechise or indulge in familiarity with these Canadians. One glance of irony, a gesture of assumed humility, a thrust of sarcasm, delicate but deadly, was warning enough. But the Minister understood none of these things: that an affectation of jocularity was an offence; that talk of patriotism to soldiers was cause for derision, that the wearing of "Canada" as a shoulder badge was for purely military purposes and not for advertisement. Nor may soldiers be paraded for show before any lesser person than their commanding officers or the King himself. Their eyes had seen too much. The best troops are delicate to handle, and wise officers go warily. War is a sad and solemn business.

This theory that an army corps three thousand miles away could be commanded from Ottawa had its logical fulfilment in a Canadian Order in Council, dated February 23, 1916, that all appointments and promotions in the field must first be approved by the Minister of Militia. This order arrived at the front early in April whilst the struggle for the craters at St. Eloi was at its fiercest. One battalion alone had lost 13 officers, and if these could not be replaced until the gauntlet at Ottawa had been run, the battalion must be withdrawn from the line.

The Minister in time lost the confidence of his colleagues; he never had the confidence of the army after

it became an Army. At the time of the South African war he forced himself into a position where he suffered humiliation, and he cherished that grievance until the end of his days. The journalists, of whom he was insatiably fond, did him much harm by their indiscriminate praise; and the writer of "Canada in Flanders" went too far with his irony in likening him to Napoleon without Napoleon's limitations. When he resigned there was a sense of deliverance.

The medical service had suffered most because it was the most vulnerable and the first to be attacked. Incredible as it may appear, there was nothing irrevocable in this order for the segregation of patients; and the controversy was settled by circumstances imported into the issue. To expound a dilemma is the business of history, if history is to be anything more than a literary exercise. The very term "segregation" was unfortunate for the Minister. In the army it is a word of sinister import. The conflict over this word lasted two years, with detriment to the service, danger to the government, distress to the public, and embittered personal relations. In time the question would have settled itself under the inexorable force of war, as indeed it was settled. It would be found impossible to segregate the Canadian medical service from the other services engaged upon the same task,—the care of the sick and wounded. If it had been so segregated the Canadian sick and wounded would have suffered most. Had the Canadian medical service come into the field relying upon itself alone, as it was recommended to do and as the Americans were compelled to come, in a strange land with organization untested and equipment untried, it, and the wounded, would not have fared even as well. The American experience is illuminating.

In the year 1918, the Canadian medical personnel numbered 14,616 of all ranks out of a total strength of 240,415 in all arms of the service; that is, a percentage of slightly over six. In the American Army a percentage of 14 was considered as a conservative statement of their needs. But their medical department was allowed only 7·65 per cent, and it was not until October, 1918, that this ratio was reached. In the previous spring a percentage of 11·6 was considered "a just estimate," but the medical department was kept 30 per cent beneath even the low percentage of the priority scheme. The shortage on their approved priority included 25 base hospitals, 4 hospital trains, 8 evacuation hospitals, and 4 other units. On November 11, it amounted to: officers 3,604, nurses 6,925, and other ranks, 28,023. The personnel expected to arrive in October was 34,868. In reality only 18,000 came. Their operating surgeons were on duty for 72 hours; some base hospitals organized for 500 patients were forced to take 2,100; practically all cared for at least 1,500; and some had as many as 3,000 or more. As early as July 30, the Chief Surgeon in a formal memorandum declared "that the surgical teams were obtained by stripping the base hospitals of their staffs at the very time when their services were most needed." The "one factor," he adds, that "saved the medical department from collapse was the spirit of the personnel at the front and rear." The situation in the American Army at times was reported as "desperate," and in the early days of November it appeared that "the armistice was the only thing that could save the medical department from breaking under the strain."[1] One hesitates to surmise what would have happened to the Canadian Army in similar circumstances.

In reality the laudable desire was fulfilled, that the Canadian sick and wounded should have the benefit of their own service when they needed it most. They were served continuously and exclusively by Canadian regimental officers and field ambulances in the trenches, on the field, in the forward area, in dressing stations and rest camps. The medical personnel was as familiar to them as the civil practitioners in their own towns at home. The disputants in London and in Canada were blind to this service.

The facts were plain, and would have risen to the surface without the injection of sentiment; it was by sentiment the controversy was settled, before the facts had time to disclose themselves. It often happens that way. Imperial sentiment was invoked. Under its force the Minister went down, and brought down with him that strange fabric of personal representation and civilian control, which he had established in London for carrying on the war. This sentiment arose out of the somewhat ambiguous theory that "the bonds of Empire" would be strengthened by the intermingling in hospitals of men from all the forces of the army, as they had intermingled, comrades on the field. It was vain to suggest that men who are sick and wounded are not always in the most winsome mood, and may arouse antipathy rather than a sense of Imperial fellowship. Yet it is historically true that sentiment prevailed.

The order for segregation read: "That we provide sufficient active treatment hospital accommodation in a concentration area at Shorncliffe to take care of all casualties from the front, and that we discontinue the use of English hospitals for Canadian patients as much as possible." To the Canadian wounded this appeared as a reflection upon their English hosts. This sentiment is

well expressed in a letter from a very important public man in England: "What made the men feel especially bitter against the segregation order was that they had been given, and could see, no reason for it; and when they were asked, they could give no explanation which did not appear to involve an accusation of stupidity or callousness against the Canadian government."

The incident aroused a sentiment deeper still. The spectacle of soldiers from over every sea fighting side by side beyond the Channel awakened an emotion by which was discovered, as if in a sudden flash of inward light, the inter-relationship of the Empire. This segregation of the wounded in that light appeared as a sign of triumph for a selfish nationalism which finds greatness in separation and safety in a narrowed responsibility. It aroused apprehension in the minds of those who were convinced "that the Empire will hold together, across all sundering seas, so long only as the tide of sentiment, as a warm and vitalizing stream flows through the colder waterways of commercial and political relationships."[2]

In the perfervid atmosphere of the moment too much was made of the segregation order, which was merely a matter of ill-informed and inexperienced administration. But forces were freed against which the Minister could not prevail. In his civil office he played the heroic part of a soldier surrounded by enemies. He had no enemies until he had created them; and then he failed to estimate the number or their strength. In a speech delivered in London, Ontario, as long ago as November 25, 1914, he was too contemptuous of his critics. He was for "shooting" dishonest contractors, and he recommended militia officers to "raw-hide" any civilians who doubted their capacity or courage. This unrestrained roughness in time wore down many who desired to be his friends.

The end came with a speech that he delivered on November 9, 1916, before the Empire Club in Toronto. The speech was reported by cable next day in London. To the astonishment of all who read, the Minister "advisedly and on his own responsibility" made certain charges against British army administration of a comprehensive kind. He declared that the equipment, transport, and arms of the Canadian troops were "scrapped" by English officers to be replaced by other material of an inferior quality. A grave allegation followed, namely, that "thousands of Canadians had lost months, and sometimes a year, in hospitals not under Canadian control, when they should have been back in the trenches, and that Canadian soldiers were allowed to go under the knife of first-year medical men while the services of experienced surgeons from Canada were not being utilized."

This charge against the honour of the British Army was too grave to go unnoticed. The charge of inhumanity to the wounded touched even more closely the sentimental English mind. The London press[3] displayed a restrained fury; the editor and proprietor of the most powerful English weekly periodical had in his own house, which he had converted into a hospital, 35 wounded soldiers, some of whom were Canadians, and he wrote of them in terms of praise and affection. Canadians in London, like Lord Shaughnessy, Lord Beaverbrook, and Lady Drummond, made what explanations they could.

On November 9, 1916, the Premier demanded the resignation of the Minister of Militia. He received it on the 11th. The way was now clear for a properly co-ordinated civil and military control of all the Canadian forces wherever they might exist, in Canada, England, France, or elsewhere. The civil and military functions previously combined in one person and conferred upon

his "personal representative" in London were separated. An Overseas Minister was appointed, who confined himself to ministerial functions; and a soldier was put in command, who was content to leave civil functions alone. With the advent of Sir George Perley and General Sir R. E. W. Turner the situation cleared, and remained clear until the end. The authority of General Jones had been so impugned that upon his restoration his position was considered untenable. A soldier was taken from the field and given the command. He brought certain soldiers on his staff; and from that day there was outward peace and an appearance of inner harmony in the medical service, administered as it came to be by military methods tried by long experience.

In Canada the end of the strife was not yet. A Dominion election was in sight, the one that was actually held December 18, 1917, in which the main issue was compulsory military service. This report of the Special Inspector-General was too powerful a weapon to remain unused, and in the hands of the ex-Minister, it was used with deadly effect against the prestige of the Government. A subject so closely concerning the medical services, which received so much parliamentary attention, and so profoundly moved the public mind, deserves further historical exposition.

An evil fate pursued this Report even to Canada. It came in mystery. Impartial minds were bewildered. Opponents of the government suspected something sinister; and some from being conscious enemies of the government became, without knowing or wishing it, enemies of the service too. The matter was debated in the House of Commons at Ottawa on fourteen separate days at intervals from January 29, 1917, to June 26, 1919. It was difficult for the members to know what they were talking

about, and they could not know if what they were saying was true, because at the time the documents were not before them; and one "Report" of which much was made was not a Report at all, but merely a series of comments made by a person who professed himself dissatisfied with the previous one.

During this debate Sir Sam Hughes was no longer Minister of Militia. He was thereby enabled to speak with the frankness of irresponsibility. The subject was introduced in the debate upon the address in reply to the Governor General's speech on January 29, 1917, by Mr. G. W. Kyte, who referred to "charges which reflect very seriously upon the conduct of the medical staff."[4] Mr. J. W. Edwards on the same day admitted that it was difficult to discuss the subject as the Reports were not upon the table; but both speakers quoted from elaborate summaries which had been published in the press.

On the following day Sir Robert Borden laid upon the table two documents, one of which was described as "a Report by Colonel Bruce on the Canadian Army Medical Service," and the other as "the Report of the Board of Enquiry of which Sir William Babtie was chairman." Of the former, he said it was "the only copy available on this side of the ocean." Sir Sam Hughes, speaking next, corrected the impression that this document was unique. He disclosed the existence of another Report, one made by General Jones, and gave to the whole incident a touch of the trivial. He relates: "General Wilson of Montreal notified me that he had found a parcel in his office which had been left by a young soldier named Shaw who came back some time last fall. It had been injured by water." This parcel had reached him the previous day, and it contained "four or five copies of a report—I have not looked at them—of General Jones' and the Bruce Report. As

to the publication of these reports, the first report, a fly-leaf, was given to me by Dr. Bruce, and the next two or three reports by Surgeon-General Jones. The first Report I ever saw was issued by some women's association to which General Jones had evidently given a copy."[5] The paragraph is quite confused, but not more confused than the whole debate.

And yet these Reports could not have reached the Minister in the casual way he described. On the previous day he admitted that he had received the original Report in September; but, he added, "the matter has never been taken up." The matter would appear to have been completely taken up, for the writer of one Report was recalled to Canada and the writer of the other was appointed in his place. It was on October 13, 1916, that the change was made effective by cable. A letter from the Minister followed, confirming his appointment to proceed with the reorganization of the medical service "as recommended in his special report to me." The Report of the Inspector-General must therefore have been before him.

Sir Sam Hughes was not illiterate, but he did not fully understand the specific effect his words would have upon those who read them. He spoke with a certain artless simplicity and open candour. When he said that operations were being performed by "first-year medical men," he did not mean medical students in their first year but medical men in the year following their graduation. When he further defined them as "those fellows," he was in fact applying a term of contempt to medical officers in the front line, who were performing the simple but hazardous task of accompanying the troops in their farthest advance. No such persons were "put in charge of hospitals,"[6] but the calumny spread from Parliament to the remotest homes of the soldiers.

It was a legitimate aspiration that Canadian troops should have the services of Canadian medical officers and of Canadian nurses. It was proper that parliament should be told of the military exigencies which compelled Canadian medical units to care for all that came. The matter had full debate on February 6, 1917.[7] The contribution of the ex-Minister was read with alarm in the country, and in the army with that feeling which an immodest thing uttered in public arouses. It appeared to make a jest of the wounded; it seemed to traduce the hospitals; it read like an attempt to tear aside that cloak of convention woven in the sacrosanct silence of professional reticence, within which the man and the woman, the physician and the nurse, are enabled with an austere oblivion of self and sex to bring to the succour of the wounded their united force. In time of peace it is hard enough to protect this joined profession; in time of war it was a delicate feat to accomplish, and the wounded themselves were the most resolute to assist in its accomplishment.

Lest it may be assumed that too much was made in the medical service of this aspersion upon its virtue, the official words of the ex-Minister are set forth:—[8]

"If you happen to be at the front when they are passing the wounded along, you will hear some one cry: Where are these for? And the answer is: Matrimonial Bureau No. 1, and they are taken to a certain hospital. When another batch comes along, the order is to send them to Matrimonial Bureau No. 2, and they are taken to another hospital. That is the way they have the hospitals all labelled, according to the opportunities there are for matrimony for the boys. We are to-day paying separation allowances in Canada for scores of little girls who have married with these boys in England, through the brow-rubbing and the hand-holding in the hospitals. I never interfere in regard to that sort of thing; but if a girl is going to have a chance, I want one of the oldest nurses with three years' training to have it with the boys."

This was taken as a Minister's conception of the solemn duties of the medical service at the front. Sir Sam Hughes in these words did himself a complete injustice. He said what he did not mean, and did not say what he meant. His ill-timed jocularity was taken as a literal statement of fact. One with full knowledge will surmise that his jest was directed not against the Canadian military hospital establishments but against those less formal voluntary institutions which grew up in England in the hour of need. In any case these marriages which he so justly deplores were not with nurses, voluntary or professional; they were with village maidens whom the men encountered in the sentimental mood of convalescence. The public was without full knowledge and took his words as they appeared.

This war and those years will be a subject of curiosity so long as men can read. The Minister essayed a powerful rôle, and assumed the risk of historical judgement. With his exuberant energy and confident patriotism he took upon himself as a personal task what could only be achieved by the most skilled and delicate military organization. The glorious experiment was impossible. His career is a warning to democracy of the inevitable man that will arise when defence in time of peace is a matter of no serious concern; his fate is an admonition to all men lest they attempt things beyond their reach. The last echoes of the controversy were heard in Parliament on June 26, 1919, when a member announced that he held in his hand a book which contained all the documents that had once been so eagerly enquired for and much additional matter. He asked if it was the intention to take any action by enquiry or otherwise upon the publication. Sir Robert Borden replied, "I am not

aware of any reason why there should be any enquiry." This book was a record of private grievance and was considered of no public concern.

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[1] Report of Surgeon-General U.S. Army, 1919, Vol. II, p. 1291.
[2] *The Times*, October 6, 1916, Lady Drummond.
[3] *The Times*, Oct. 6, 9, 10, 19, 24, 1916; Jan. 3, 1917.
*Brit. Med. Jour.*, 1916, p. 697.
*The Spectator*, Nov. 18, 1916.
*The Daily Chronicle*, Nov. 18, 1916.
[4] Hansard, 1917, p. 217.
[5] Ibid, p. 630.
[6] Ibid, p. 555.
[7] Ibid, p. 567.
[8] Ibid, p. 567.

## CHAPTER XVII

### REORGANIZATION 1917

HEADQUARTERS—THE COMMAND DEPÔT—THE ORTHOPAEDIC CENTRE—MEDICAL BOARDS AND CATEGORIES

The duties of director general of medical services were assumed on February 13, 1917, by Major-General G. L. Foster. When he came to London he found in existence military means for performing those duties, as a military staff had been created just before his arrival. The respective functions of such a staff are so well defined by immemorial usage that no one branch is ever tempted to interfere in the specific operation of any other; and a soldier on the staff, who has served well in the field, feels strong against external interference by the certainty that he will be welcomed back into the field again.

The first business of the new director was to create an administrative staff. Many of the existing officers were retained. He brought with him from the field Colonel H. A. Chisholm, and placed him in charge of administration and personnel. This post was one of peculiar difficulty. A curious word, "wangle" was born in the army. It meant the act of seeking something which could only be granted at the expense of another or to the detriment of the service. To all such seekers Colonel Chisholm was soldierly and, as some thought even too brusquely, implacable.

The new Director continued Colonel Murray MacLaren as deputy, a place he had filled since May 4, 1916, and relinquished September 12, 1918; he recalled Colonel

H. S. Birkett from France as assistant director, December 12, 1918; he employed Lieut.-Colonel F. C. Bell to control the movement of patients in their hospital progress; Lieut.-Colonel W. H. Delaney upon boards; Lieut.-Colonel J. S. Jenkins, in charge of supplies; Matron-in-Chief M. C. Macdonald to control the nursing service. The headquarters were housed in a commodious building at 133 Oxford street W. It required the services of 36 officers and 158 other ranks; the internal economy was managed by Captain C. R. Wilson, a combatant officer invalided for wounds.

Certain changes were made in the administrative areas, which would be tedious to follow in detail; but the general policy was to establish the continuity of service in England and in France. There was a movement of personnel to and from the front; the predilection of officers was considered subject to the good of the service, but many were retained in England contrary to their desire until the end, their services being indispensable.

It would be futile also to attempt a textual summary of the activities of each individual hospital; the history of these is given separately in tabular form. But certain new formations demand extended notice, those, namely, by which it was at all possible for the medical service to perform its functions of treating patients and returning them with dispatch either to duty or to civil life. The medical service has two sides, the professional and the military. In a military history it must be allowed that the professional aspect be in large measure relegated to more purely medical observation in medical publications.

### The Command Depôt

The command depôt was a new thing in military life. It developed from a kind of hospital designed to fit recruits

for service, and finally passed out of medical control. In England, as elsewhere, recruits were being passed, who after a few months were found unfit. The time spent in their training was wasted; they encumbered the service, and upon discharge were subject to pension for such disabilities as hernia, varicose veins, weakness, and old age. On the other hand, when the need for men became urgent, it was discovered that only a part of the population could pass the hard tests of the regular army. When war broke out there was only provision for examining 50,000 recruits a year; in September, 1914, alone 500,000 men presented themselves for enlistment. Local medical boards composed of civilians were set up, but the members were inexperienced; many were ignorant; some were careless, and a few dishonest. In December, 1915, these local boards were abolished and their place taken by recruiting medical boards in each area. The president was to be a regular officer and the other members civilians of special experience.

To meet these difficulties standing medical boards were appointed in March, 1915, to all stations where reinforcement drafts were being furnished for service abroad. These boards were to examine all men reported by their unit as unfit for service abroad, and classify them: as fit for such service; temporarily unfit; fit for home service only; or unfit for any service. In July, travelling medical boards, composed of two medical officers of senior rank and a combatant officer also of high rank were established to further control the large numbers of men returned as unfit for duty. In September, 1915, it appeared that 15,801 men who had been more than sixty days with their units were at least temporarily unfit. Centres were organized to treat these men, and determine their future. The method was afterwards enlarged to deal with casualties from overseas and ensure a prompt evacuation of hospitals. In time these treatment centres developed into command depôts.

This system of medical examination of recruits by civil practitioners, supervised by an inspector, reviewed by the commanding and medical officer of the unit, subject to further direction by standing and travelling boards, failed on account of the innate hostility between the civil and military elements in the community. In August, 1917, a committee appointed for the purpose recommended that all medical boards should be under civilian control. This opinion, that the collection of men for military service was a civil function had been expressed two years earlier by the Adjutant-General, and when the Ministry of National Service was reconstructed under Sir Auckland Geddes, Oct. 31, 1917, the whole system of recruiting was placed in the hands of civilians.[1] In Canada this innate hostility of civilians towards military medical boards was not recognized, and the result was that one province at least became alienated in spirit from the Confederation.

There were already in England 13 Command depôts allotted to the various commands with accommodation for 45,577 men, when the Canadian service resolved to conform. Accordingly, Canadian command depôts were organized beginning at Hastings, February 27, 1917: No. 1 for troops in the Shorncliffe area; No. 2 in Bramshott; and No. 3 for troops in other parts of England. Each depôt had an establishment for 5,000 soldiers, and was in command of a combatant officer with medical officers attached as required. Men discharged from convalescent hospitals, who required "hardening" before joining their units, passed through these command depôts. They received physical training, instruction in musketry, bombing, and bayonet fighting. On discharge from the depôts, they were sent to the reserve units of their various regiments and corps; thence through the base depôt and corps reinforcement camp to rejoin their units in the line.

Previous to the creation of the command depôt a sincere attempt had been made in the Canadian service to carry the soldier over that difficult period between his discharge from the convalescent hospital and his return to the reserve unit on his way to the line, to other duty, or to civil life. It was inhumane to compel a man fresh from the hospital and still suffering from the results of sickness or of wounds to endure the routine of the reserve unit. The result was that the hospitals were crowded or the reserve units burdened with men for whose care they were not designed. It was only a partial remedy that these men found private quarters for themselves and were lost to the service until they could be discovered.

The Casualty Assembly Centre, established at Folkestone, February 13, 1916, removed to Shoreham in October, and to Hastings in November, was formed to meet this need, and it remained in operation until superseded by the reorganized Command Depôts in April, 1917. A complete and perfect system for the disposition of casualties had been created by the director of recruiting and organization. It is described in a volume of 110 pages, published October 31, 1916, and contains copies of all documents required. The Assembly Centre was finally merged into the Command Depôt and the continuity of the system was unbroken.

A command depôt was officially defined as a convalescent camp equipped with facilities for electrical and massage treatment under medical direction, but mainly organized and controlled under purely military officers, with the object of hardening men by suitable exercises and graduated drill for return to active service at the front in a period of about six months. The men lived in huts heated by stoves, and slept on wooden forms with straw palliasses and military blankets.

The cases suitable for admission to a command depôt were: men recovering from gunshot wounds not involving joints or nerves; united nerves giving normal action to muscles; Pott's fracture, Colles's fracture with no ankylosis of joints; injuries to the left hand not preventing the use of a rifle; simple myalgia without obvious organic symptoms; spinal injuries with headache or paresis, shell shock with the slightest tremor or mental impairment. Paralysed limbs, drop foot or hand, and neuritis, were not considered suitable cases for admission. All scars were to be firmly healed, and not situated at points of regular pressure of equipment. The command depôts were visited regularly by an orthopaedic surgeon, to help the staff in their choice of cases for orthopaedic treatment.[2]

### The Orthopaedic Centre

At the same time there were in the kingdom ten orthopaedic centres with 4,420 beds. It is difficult to assign a date to the establishment of the Canadian orthopaedic centre, as the special kind of work therein performed developed gradually in various places. A special hospital for orthopaedic cases was opened at Ramsgate, November 15, 1915, with Lieut.-Colonel W. L. Watt in command, but it was devoted rather to treatment which afterwards became more peculiar to convalescent camps and command depôts. It was only after its removal to Buxton in October, 1917, with Lieut.-Colonel J. T. Clarke still in command, that orthopaedic work was especially developed. When this hospital closed in September 1919, it had a record of seventeen thousand patients with 2,543 cases of previous amputation.

Orthopaedic cases comprised a large proportion of those invalided from abroad with severe surgical injuries. They

were held by the Army Council to include the following: Derangements and disabilities of joints, simple and grave, including ankylosis; deformities and disabilities of feet, such as hallux rigidus, hallux valgus, hammer toes, metatarsalgia, painful heels, flat and claw feet, malunited and ununited fractures; injuries to ligaments, muscles, and tendons; cases requiring tendon transplantation or other treatment for irreparable destruction of nerves; nerve injuries complicated by fractures or stiffness of joint; certain complicated gunshot injuries to joints; and cases requiring surgical appliances. These cases fell into two groups—those whose disablement was only temporary and would after treatment be fit for military service again, and those who were so disabled that they must be discharged from the army.

In each orthopaedic centre, surgical operations were performed; massage, electrical treatment, hydrotherapy, and gymnastic exercises were employed; and curative workshops were established, in which industries were directly curative by giving exercise to the affected part under the surgeon's control and supervision. They were indirectly curative by their psychological influence upon the patient. Apathy and inertia were replaced by bodily and mental activity. Also they enabled a certain number of men to acquire a craft or trade by which they became more competent after discharge. Some of their work while in hospital had a value in itself.

### Medical Boards and Categories

The route of the wounded soldier then was—regimental aidpost, advanced dressing station, main dressing station, casualty clearing station, general hospital. From the general hospital one of two routes was open to him

according to the nature of his wound. If the condition were temporary and would after six months treatment permit him to return to active service, he went through a convalescent camp to a command depôt. If his injury was more severe he went to an orthopaedic hospital, from which after a longer period he might return to duty, or if he were hopelessly disabled for any military service he would be discharged and pensioned.

In all cases before returning to duty the men were sent to convalescent camps and then to their reserve units where they were subjected to a process of hardening. For the first week they marched without arms a mile morning and afternoon; in the second week two miles quick march; in the third week four miles; in the fourth week they did full duty, and in the fifth week they were ready for draft. Officers went to their own casualty company at Bexhill.

To assist in the process of training and hardening a gymnastic staff was created. It provided a cadre of qualified instructors in remedial gymnastics as well as in physical training and bayonet fighting. A school was operated first at Shorncliffe and then at Bordon. Up to November, 1918, classes were held in which 1,300 officers and 2,966 other ranks, took part. The relation between the medical services and the gymnastic staff was at one time difficult, but it was adjusted upon the principle that everything pertaining to the treatment of the men, whether by physical or other means, must be retained under control of the medical services.

A battalion for young soldiers was organized in 1917 at Bramshott for boys who had gained entrance to the army by overstating their ages. At one time it rose to the strength of 700, and 568 of these were sent to France when they had reached the age of eighteen years and were sufficiently trained.

Segregation camps were established in England, where troops arriving from Canada were assembled for a period of quarantine, instead of being sent direct to their regimental depôts. Their training was continued, and they were not a menace to the trained troops by reason of infectious diseases imported from civil life. The limitation of those diseases peculiar to childhood is a present relief to the child, a hardship to him when he becomes a soldier, a menace to the army.

As the war went on a fear arose on somewhat uncertain ground that the profession of medicine would diminish beyond the civil and military need. Attendance at the schools was low, and most of the teachers were on active service. It was decided to return to Canada all students of medicine and dentistry who had at the time of their enlistment completed one year of their course. The number of students who availed themselves of this privilege was 230, and many came back to the field with their commissions earned.

For the purpose of ascertaining the physical condition of each soldier and his value as a reinforcement a system was established early in 1917 by which men were assigned to groups according to their fitness for service. Five medical categories were created, A, B, C, D, E, to include, respectively, men who were fit for general service; fit for certain kinds of service; fit for service in England; temporarily unfit but likely to become fit after treatment; and all others who should be discharged.

Category A was divided into four classes 1, 2, 3, 4, which contained respectively: men who were fit for active service in respect of health and training; men who had not been in the field but only lacked training; casualties fit as soon as they were hardened by exercise; and boys who would be fit as soon as they reached 19 years of age.

Category B was likewise subdivided into four groups, to include men who were fit for employment in labour, forestry, and railway units; men who were fit for base units of the medical service, garrison, or regimental outdoor duty; men capable of sedentary work as clerks; or skilled workmen at their trades. In Category C were placed men fit for service in England only.

In Category D were all men discharged from hospital to the command depot, who would be fit for Category A after completion of remedial training; and there was a special group to include all other ranks of any unit under medical treatment, who on completion would rejoin their original category. Category E included men unfit for A, B or C, and not likely to become fit within six months.

It was a general rule that a soldier could be raised in category by a medical officer but lowered only by a board. A commanding officer could, however, raise a man in Category A from second to first group, since training alone and not medical treatment was involved. All soldiers of low category were examined at regular intervals and new assignments made.

It was the function of the medical services to assign recruits and casualties to their proper categories. In April, 1918, when the demand for men became urgent, an allocation board was set up for the duty of examining all men of low category, and assigning them to tasks that were suitable for their capacity. Under the operation of this board the headquarters' staffs in England were reduced in personnel from 700 to 380, and the medical services alone were deprived of nearly two thousand men of high category.

At a late period, that is, in December, 1917, a school of training in military massage was established at Buxton where 88 nursing sisters qualified; schools for other ranks were operated at Bexhill and Epsom. The training depôt

was divided into two units—the reserve for all reinforcements, the casualty company for non-effectives. Since March 31, no other ranks had been received from Canada for the medical service; the strength was maintained by men of low category from other arms, of whom 2,035 were taken on, and nearly all fit men released.

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[1] *British Official History of the War. Med. Serv. Gen. Hist.*, Vol. 1, p. 118.

[2] W. Colin Mackenzie, M.D., *Brit. Med. Jour.* Special No. 1917, p. 78, *et seq.*

# CHAPTER XVIII

## ESTABLISHMENTS AT THE BASE AND ON THE LINES OF COMMUNICATION

HOSPITALS—GENERAL—STATIONARY—SPECIAL—CONVALESCENT—MISCELLANEOUS AND MINOR HOSPITALS

Lines of communication medical units were at first mobilized on the basis of two general and two stationary hospitals for each division. After the 2nd Division arrived in England this system was discontinued and units were organized as needed. These units eventually reached the following in number; 16 general, 10 stationary, 7 special, and 8 convalescent hospitals. Some of the stationary and convalescent hospitals were eventually converted into general hospitals. The hospitals in England often had small units or other special and private hospitals affiliated with them. The following record shows the date and place of organization, officers commanding and matrons; and by cross reference gives the entire history of the units.

### GENERAL HOSPITALS

General hospitals were originally equipped for 520 beds, but were increased in 1915 to 1,040, after which date they varied in bed capacity as necessary up to two thousand. Some of them in the year 1918 had a greater capacity, namely, No. 2, 2,210; No. 7, 2,290; and No. 16, 2,182.

No. 1 Organized Valcartier, 3-9-14; Salisbury Plain, 20-10-14 to 13-5-15; Etaples, 31-5-15 to 20-7-18; Trouville, 21-7-18 to 4-2-19. Officers Commanding: Colonels—M. MacLaren, C. F. Wylde, R. M. Simpson, J. A. Gunn, W. H. Delaney, Matrons: V. C. Nesbitt, E. Campbell.

No. 2 Organized Valcartier, September, 1914; Salisbury Plain, 18-10-14 to 13-3-15; Le Tréport, 16-3-15 to 2-3-19. Officers Commanding: Colonels—J. W. Bridges, K. Cameron, G. S. Rennie. Matrons: E. C. Rayside, H. E. Dulmage, M. M. Goodeve, F. Wilson.

No. 3 (McGill University). Organized Montreal, 5-3-15; Shorncliffe, 16-5-15 to 16-6-15; Dannes-Camiers, 19-6-15 to 5-1-16; Boulogne, 6-1-16 to 29-5-19. Officers Commanding: Colonels—H. S. Birkett, J. M. Elder, L. Drum. Matron: K. O. MacLatchy.

No. 4 (University of Toronto). Organized Toronto, 25-3-15; Shorncliffe, 28-5-15 to 15-10-15; Salonika, 9-11-15 to 18-5-16; Kalamaria, 19-5-16 to 17-8-17; Basingstoke, 18-9-17 to 2-7-19. Officers Commanding: Colonels—J. A. Roberts, W. B. Hendry, H. C. Parsons. Matron: A. J. Hartley.

No. 5 Organized Victoria, 30-5-15; Shorncliffe, 5-9-15 to 16-11-15; Salonika, 14-12-15 to 16-8-17; Liverpool, 13-10-17 to 15-8-19. Officers Commandng: Colonels—E. C. Hart, G. D. Farmer, P. Burnett. Matrons: F. Wilson, J. Matheson.

No. 6 (Laval University). Organized Montreal, Sept. 1915 as No. 6 Stationary Hospital; Shorncliffe, 10-4-16 to 1-7-16; St. Cloud, 10-7-16 to 4-8-16; Joinville-le-Pont, 5-8-16 to 17-1-17; Troyes, 18-1-17 to 20-6-18; Joinville-le-Pont, 21-6-18 to 10-5-19. Officer Commanding: Colonel G. E. Beauchamp. Matron: Y. Baudry.

No. 7 (Queen's University). Originally No. 5 Stationary; Cairo, 26-1-16 to 10-4-16; Le Tréport, 22-4-16 to 13-10-16; Etaples, 14-10-16 to 31-5-19. Officer Commanding: Colonel F. Etherington. Matrons: B. J. Willoughby, G. Muldrew.

No. 8. Originally No. 4 Stationary; St. Cloud, 8-7-16 to 12-2-19. Officers Commanding: Colonel A. Mignault, Lieut.-Colonel A. E. LeBel, Colonel H. R. Casgrain, Lieut.-Colonel R. deL. Harwood. Matron: C. A. De Cormier.

No. 9. Originally Shorncliffe Military Hospital; Shorncliffe, 10-9-17 to 17-12-18; Kinmel Park, Ryhl, 17-12-18 to 26-6-19. Officers Commanding: Colonels—E. G. Davis, E. J. Williams. Matron: V. C. Nesbitt.

No. 10. Originally Kitchener Military Hospital; Brighton, 10-9-17 to 3-9-19. Officers Commanding: Colonels—C. F. Wylde, W. McKeown. Matrons: E. B. Ross, M. Cornell.

No. 11. Originally Moore Barracks Military Hospital; Shorncliffe, 13-9-17 to 20-9-19. Officer Commanding: Colonel W. A. Scott. Matrons: E. C. Rayside, B. L. Smellie, E. C. Charleson.

No. 12. Originally Bramshott Military Hospital; Bramshott, 12-10-17 to 23-9-19. Officers Commanding: Lieut.-Colonel H. E. Kendall, Colonels—W. Webster, H. M. Robertson. Matron: G. Muldrew, A. C. Strong.

No. 13. Originally Hastings Military Hospital; Hastings 2-10-17 to 6-6-19. Officers Commanding: Colonel E. J. Williams, Lieut.-Colonel H. C. S. Elliott, Matrons: A. C. Strong, J. Cameron-Smith.

No. 14. Originally Eastbourne Military Hospital; Eastbourne, 10-9-17 to 23-10-19. Officers Commanding: Lieut.-Colonels—E. Seaborn, K. D. Panton. Matrons: J. Cameron-Smith, B. J. Willoughby.

No. 15. Originally Duchess of Connaught Canadian Red Cross Hospital; Taplow 10-9-17 to 15-9-19. Officers Commanding: Colonels—W. L. Watt, P. G. Goldsmith. Matron: E. Russell.

No. 16. Originally Ontario Military Hospital; Orpington 10-9-17 to 20-9-19. Officer Commanding: Colonel D. W. McPherson. Matron M. H. Smith.

### Stationary Hospitals

The original bed capacity of a stationary hospital was 200, enlarged to 400 in 1915. They varied according to the needs of the service from 400 to 650 beds, one of them, No. 3, reaching a capacity of 1,090 in 1918.

No. 1. Organized Valcartier, 15-9-14; Hampstead, 12-11-14 to 1-2-15; Wimereux, 3-3-15 to 28-7-15; Lemnos, 16-8-15 to 31-1-16; Salonika, 3-3-16 to 4-9-17; Hastings, 28-8-17 to 2-10-17, when it became No. 13 General Hospital. Officers Commanding: Lieut.-Colonels—L. Drum, S. H. McKee, E. J. Williams. Matrons: E. M. Charleson, L. Brock.

No. 2. Organized Valcartier, 6-9-14; Le Touquet, 27-11-14 to 20-10-15; Outreau, 21-10-15 to 1-4-19. Officers Commanding: Lieut.-Colonels—A. T. Shillington, J. T.

Clarke, G. D. Farmer, D. Donald, G. Clingan, J. Hayes. Matrons: E. B. Ridley, A. C. Strong, J. Urquhart, G. Pope, S. C. McIsaac.

No. 3. Organized London, 17-2-15; Moore Barracks, 5-5-15 to 1-8-15; Lemnos, 17-8-15 to 6-2-16; Boulogne, 10-4-16 to 10-11-16; Doullens, 11-11-16 to 18-8-18; Rouen (closed) 19-8-18 to 7-10-18; Arques, 8-10-18 to 28-2-19. Officers Commanding: Lieut.-Colonels—H. R. Casgrain, E. G. Davis, C. H. Reason. Matrons: J. B. Jaggard, E. M. Wilson.

No. 4. Organized Montreal, 8-3-15; Tent Hospital, Shorncliffe, 16-5-15 to 19-9-15; St. Cloud, 20-9-15 to 8-7-16, when it became No. 8 General Hospital. Officer Commanding: Lieut.-Colonel A. Mignault. Matrons: M. H. Casault, C. A. De Cormier.

No. 5 (Queen's University). Organized Kingston; Tent Hospital St. Martin's Plain, Shorncliffe, 7-6-15 to 1-8-15; Cairo, 14-8-15 to 26-1-16, when it became No. 7 General Hospital, 26-1-16, and remained at Cairo. Officer Commanding: Lieut.-Colonel F. Etherington. Matron: B. J. Willoughby.

No. 6 (Laval University). Organized Montreal September 1915, but was immediately converted into No. 6 General Hospital.

No. 7 (Dalhousie University). Organized Halifax, 21-10-15; Shorncliffe Military Hospital, 10-1-16 to 16-6-16; le Havre, 19-6-16 to 30-12-16; Harfleur, 31-12-16 to 13-5-17; Arques, 14-5-17 to 18-4-18; Etaples, (closed) 19-4-18 to 23-5-18; Rouen, 24-5-18 to 21-9-18; Camiers, 22-9-18 to 23-2-19. Officers Commanding: Lieut.-Colonels—J. Stewart, E. V. Hogan. Matron: L. M. Hubley.

No. 8 (Universty of Saskatchewan). Organized Saskatoon, 27-3-16; Canadian Military Hospital, Hastings, 1-1-17 to 2-10-17; Canadian Special Hospital, Witley, 2-10-17 to 10-11-17 (closed for 1 month); Camiers, 10-12-17 to 16-4-18; Charmes, 17-4-18 to 1-11-18; Rouen, (closed) 2-11-18 to 14-11-18; Dunkerque, 16-11-18 to 14-4-19. Officer Commanding: Lieut.-Colonel H. E. Munroe. Matron: J. Urquhart.

No. 9 (St. Francis Xavier University). Organized Antigonish, 3-3-16; Bramshott Military Hospital, 3-10-16 to

5-12-17; St. Omer, 12-12-17 to 19-4-18; Etaples, 20-4-18 to 9-9-18; Camiers, 10-9-18 to 21-5-19. Officers Commanding: Lieut.-Colonels—R. C. McLeod, R. St. J. Macdonald. Matron: S. C. McIsaac.

No. 10 (Western University). Organized London, 10-5-16; Seaford, 2-11-16 to 20-1-17; Eastbourne, 21-1-17 to 5-12-17; Calais, 25-12-17 to 16-4-19. Officer Commanding: Lieut.-Colonel E. Seaborn. Matron: H. E. Dulmage.

No. 11. Organized Vancouver, 9-10-18; Vladivostock, 26-10-18 to 5-6-19. This hospital operated in Siberia, and had a bed capacity together with its annexes of 575. It had no nursing sisters. Officer Commanding: Colonel J. L. Potter.

### Special Hospitals

There were four special hospitals in 1916, increasing to seven in 1918. These hospitals were for such cases as orthopaedic, tubercular, eye and ear, physiotherapy, and venereal. The bed capacity varied, according to the type of cases to be provided for.

Granville Special Hospital (orthopaedic) Ramsgate, 28-9-15 to 18-10-17; Buxton, 19-10-17 to 17-9-19. Officers Commanding: Lieut.-Colonel W. L. Watt; Colonels—J. T. Clarke, E. C. Hart, M. MacLaren. Matrons: E. B. Ridley, V. A. Tremaine, M. E. Blott.

Westcliffe Eye and Ear Hospital, Folkestone, 20-10-15 to 20-9-19. Officers Commanding: Colonels—J. D. Courtenay, S. H. McKee. Matrons: F. Grand, Y. Baudry, M. H. Casault, F. Wilson, J. T. Scott.

Special Hospital (tubercular), Lenham, 7-12-17 to 7-7-19. Officer Commanding: Lieut.-Colonel W. M. Hart, Sister-in-charge: A. M. Forrest.

Special Hospital (venereal), Etchinghill, 15-8-16 to 1-9-19. Officers Commanding: Major H. E. Paul, Colonel W. T. M. MacKinnon.

Special Hospital (venereal), Witley, 25-8-17 to 3-10-19. Officers Commanding: Lieut.-Colonels—H. E. Munroe, L. C. Harris, Colonel E. L. Stone.

Petrograd Red Cross Hospital for Officers, Petrograd Hotel, London, 25-11-18 to 16-10-19. Officers Commanding: Lieut.-Colonels—S. H. McCoy, A. E. H. Bennett. Matron: E. B. Ross.

Hospital for Officers, Hyde Park Place, London, 29-2-16 to 25-8-19. After this date it was affiliated with the Petrograd. Officers Commanding: Captains T. A. Malloch, T. M. Creighton, Majors L. W. MacNutt, P. G. Brown, S. H. McCoy; Lieut.-Colonel H. M. Robertson; Matrons V. A. Tremaine, L. G. Squire, H. Graham, D. Cotton, E. B. Ross.

Buxton Red Cross Special Hospital, Buxton, 1-2-16 to 26-3-19. Officers Commanding: Lieut.-Colonels H. D. Johnson, F. Guest, P. Burnett. Matrons: C. Macalister, E. Campbell, F. Grand, V. A. Tremaine, M. H. Casault, M. E. Blott.

### Convalescent Hospitals

Three convalescent hospitals having a total capacity of 770 beds were opened in 1915; the number rose to eight in 1918 with a capacity of 7,456 beds. The two largest were at Woodcote Park, Epsom, 3,900 beds; and Princess Patricia's Bexhill, 2,250 beds.

Woodcote Park Convalescent Hospital, Epsom, 5-9-15 to 30-6-19. Officers Commanding: Captain E. C. Cole; Lieut.-Colonels: D. W. McPherson, L. E. W. Irving; Colonel F. Guest.

Princess Patricia's Red Cross Convalescent Hospital, Ramsgate, 26-1-17 to 14-1-18; Bexhill, 15-1-18 to 18-8-19. Officers Commanding: Lieut.-Colonels—S. W. Prowse, A. J. MacKenzie; Major C. B. Peat; Colonel T. C. D. Bedell. Matrons: E. McCafferty, E. De Merrall.

Bearwood Convalescent Hospital, Wokingham, 20-9-15 to 24-7-19. Officer Commanding: Lieut.-Colonel R. E. Wodehouse. Matron: J. Cameron-Smith. Sisters-in-Charge: N. F. Meiklejohn, B. J. Blewett, M. E. Mackenzie, R. E. Pentland, S. J. Robley.

Bromley Convalescent Hospital, Bromley, 20-4-15 to 31-8-18. Officers Commanding: Majors—J. McCombe, A. W. McPherson, J. T. Hill; Lieut.-Colonels—J. L. Biggar, J. R. Spier, G. Royce.

Hillingdon House, Canadian Convalescent Hospital, Uxbridge, 20-9-15 to 12-12-17. Officers Commanding: Lieut.-Colonels—H. M. Robertson, J. A. Sponagle, W. Webster, L. R. Murray. Sisters-in-Charge: J. Stronach, B. F. Mattice, F. E. M. McCallum, M. E. Fletcher, H. T. Meiklejohn.

Monks Horton Convalescent Hospital, Monks Horton 1-5-15 to 28-8-18 (closed for 5 months during 1916). Officers Commanding: Captain T. Lyon; Majors—D. B. Bentley, F. Guest; Lieut.-Colonel G. Clingan.

King's Red Cross Convalescent Hospital, Bushey Park, 31-12-15 to 2-9-19. Officers Commanding: Lieut.-Colonels—H. R. Casgrain, J. D. McQueen, A. L. Johnson. Sisters-in-Charge: E. L. Bell, J. F. Andrews, M. M. Fraser, N. F. Meiklejohn, B. J. Blewett, M. E. Mackenzie, R. E. Pentland, S. J. Robley, Matron J. McG. Macdonald.

Officers' Convalescent Hospital, Matlock Bath, 5-3-18 to 12-9-19; capacity 210 beds. Officers Commanding: Lieut.-Colonels—P. G. Goldsmith, A. C. Rankin, G. H. R. Gibson, W. J. McAlister. Matron: E. McCafferty.

### Miscellaneous Hospitals

The majority of the hospitals mentioned in the following summary were English military hospitals taken over by Canadian personnel. After operating for a period under their original names they were reorganized into general hospitals. Their bed capacity varied from 1,000 to 3,250 including annexes. During the period before reorganization, Canadian hospitals as they arrived in England were used to staff these institutions.

Military Hospital, Basingstoke, 4-4-17 to 18-9-17. No. 4 General Hospital upon its return from Salonika, 18-9-17, took over this institution. Officer Commanding: Colonel J. A. Roberts.

Military Hospital, Kirkdale, Liverpool, 21-5-17 to 13-10-17. No. 5 General Hospital upon its return from Salonika, 13-10-17, took over this institution. Officers Commanding: Colonels—F. L. Biggar, E. C. Hart. Matron: G. Muldrew.

Shorncliffe Military Hospital, Shorncliffe, 25-7-15 to 10-9-17. At various times during its early career this hospital was staffed by the personnel of Nos. 4 and 5 General Hospitals, No. 3 Casualty Clearing Station, and No. 7 Stationary Hospital. From June, 1916, to September, 1917, it was staffed by personnel from the C.A.M.C. Depôt. No. 9

General Hospital was organized September 10, 1917, and took over this institution. Officers Commanding: Colonels —J. A. Roberts, E. C. Hart; Lieut.-Colonels—R. J. Blanchard, J. Stewart, E. G. Davis; Major C. H. Reason. Matrons: A. J. Hartley, F. Wilson, M. H. Smith, L. M. Hubley, J. Urquhart, V. C. Nesbitt.

Kitchener Military Hospital, Brighton, 14-3-17 to September, 1917. Officer Commanding: Lieut.-Colonel A. T. Shillington. Matron: E. B. Ross. No. 10 General Hospital was organized September, 1917, and took over this institution.

Moore Barracks Military Hospital, Shorncliffe, 4-5-15 to 13-9-17. At various dates during its early career this hospital was staffed by the personnel of Nos. 2 and 3 Casualty Clearing Stations, No. 3 Stationary Hospital and the C.A.M.C. Depôt. No. 11 General Hospital was organized in September, 1917, and took over this institution. Officer Commanding: Colonel W. A. Scott. Matrons: J. B. Jaggard, E. Russell, E. C. Rayside.

Bramshott Military Hospital, Bramshott, 29-9-16 to 12-10-17. During its early career this hospital was staffed by the personnel of No. 9 Stationary Hospital. No. 12 General Hospital was organized in October, 1917, and took over this institution. Officers Commanding: Lieut.-Colonels—R. C. McLeod, H. E. Kendall. Matron: S. C. McIsaac.

Military Hospital, Eastbourne, 11-1-17 to 10-9-17. During its early career this hospital was staffed by the personnel of No. 10 Stationary Hospital. No. 14 General Hospital was organized in September, 1917, and took over this institution. Officer Commanding: Colonel E. Seaborn. Matron: E. Dulmage.

Hastings Military Hospital, Hastings, 1-1-17 to 2-10-17. During its early career this hospital was staffed by the personnel of Nos. 1 and 8 Stationary Hospitals. No. 13 General Hospital was organized in October, 1917, and took over this institution. Officers Commanding: Colonel E. J. Williams, Lieut.-Colonel H. E. Munroe. Matrons: J. Urquhart, A. C. Strong.

Duchess of Connaught's Canadian Red Cross Hospital, Taplow, 16-12-14 to 10-9-17. This hospital was originally staffed by the personnel of No. 1 Casualty Clearing

Station, and the C.A.M.C. Depôt. In September, 1917, it was reorganized as No. 5 General Hospital. Officers Commanding: Colonels—C. W. F. Gorrell, D. W. McPherson, J. A. Roberts, W. L. Watt. Matrons: E. Campbell, E. Russell.

Ontario Military Hospital, Orpington, 19-2-16 to 10-9-17. This hospital was at first staffed by the personnel from the C.A.M.C. Depôt. In September, 1917, it was reorganized as No. 16 General Hospital. Officers Commanding: Colonel D. W. McPherson, Lieut.-Colonel G. Chambers. Matron: M. H. Smith.

### Minor Hospitals

In addition to the hospitals tabulated, there were many smaller institutions, the buildings being provided by private persons, the staff by Canadian or voluntary aid personnel. These small hospitals had a capacity of from 25 to 125 beds. A daily rate of from 2 to 4 shillings was paid by the Canadian authorities. The majority were in the Shorncliffe area and were annexes to the Shorncliffe Military Hospital. Such institutions were:—

For officers only, "The Limes," Crowborough; Helena Hospital, Shorncliffe; Perkins Bull Hospital, Putney Heath; and Northwood Hospital for nursing sisters at Buxton.

Convalescent homes for other ranks were the Hermitage Hospital, Hastings; Dane John, Canterbury; Lympne Castle; Luton House, Selling, and Glack House, Deal.

Special sanitoria for tubercular patients were at Pinewood. Wokingham, Ipswich, and Hastings. The typhoid convalescent cases were at Wear Bay, Folkestone.

Active treatment hospitals for other ranks were: The Bevan, Sandgate; Walmer and Queen's, Beechborough Park.

The Canadian Forestry Corps in England had two main hospitals, one at Beech Hill, Englefield Green, with

75 beds; the other at Sunningdale with 20 beds. There were in addition small detention hospitals averaging 6 beds, attached to each of the Forestry Corps Companies.

In France each of the 60 Forestry Corps Companies had small detention hospitals of 6 beds each; in addition hospitals were established at the following places and with a bed capacity as stated: Lajoux, Jura, 150; Alençon, 50; Gerardmer, 50; Conches, 35; Lesperon, 25; Parentisen-Born, 12. The senior medical officers at various times were: Lieut.-Colonels F. W. E. Wilson, J. Hayes, Major W. H. Merritt; in England Major R. R. Barker.

## CHAPTER XIX

### THE ANCILLARY SERVICES

THE NURSING SERVICE—THE DENTAL CORPS—RADIOGRAPHY—THE MOBILE LABORATORY—THE SANITARY SECTIONS—THE NAVAL SERVICE—HOSPITAL SHIPS AND ENEMY ACTION—THE TRAINING SCHOOL

The Nightingale training school for nurses at St. Thomas's Hospital was opened in 1860, and upon that foundation was erected the modern fabric of medical nursing. When the Canadian nursing sisters arrived at Plymouth in 1914, Sir Edward Ward, director of voluntary organizations, came on board with the pilot, bearing an invitation from the governors of St. Thomas's Hospital for them to be their guests in the institution. The privilege of receiving hospitality in the school founded by Florence Nightingale was eagerly accepted. Waterloo Station was reached at midnight. Mr. Roberts, the secretary of St. Thomas's Hospital, met the train and conveyed the party to the Nightingale Home, where all were made welcome by Matron A. Lloyd Still. The hundred guests were comfortably entertained without any interruption of the daily routine.

The first record of trained female nurses called up for active service in Canada occurs in the report on the suppression of the Northwest Rebellion, by Surgeon-General D. Bergin. On May 6, 1885, Nurse Miller, a graduate of the Montreal General Hospital, and at the time head nurse at the Winnipeg General Hospital, received instructions to proceed without delay to the front by the Moose Jaw trail.

On May 12, she arrived at Saskatoon and immediately took charge of the wounded. On May 23, she was joined by Nurses Elking and Hamilton, with an assistant and a helper. On May 30, four sisters of the Order of St. John the Divine, and three other skilled nurses, arrived at Moose Jaw from Toronto. The sister-in-charge was the Mother Foundress of the Order; she lived until the year 1921. In his report, the Surgeon-General adds that "much of the success that attended the treatment of the wounded at Saskatoon was, undoubtedly, due to the skill, kindness and devotion of Nurse Miller and her staff." To the Mother-Superior and staff at Moose Jaw Hospital, high praise is also given for indefatigable and unremitting attention to duty. On June 26, 1885, all patients were evacuated and the nurses left for their homes.

The first intimation of a definite service appears in General Order No. 62, of June, 1899, wherein it is set forth that the "creation of a Canadian Army Nursing Service is in contemplation, and will be organized at a future date." In November, 1899, four Canadian nurses proceeded to South Africa with the 1st Contingent—G. Pope, S. Forbes, E. Russell, and M. Affleck—who were attached to Imperial hospitals. Militia Order No. 5, of January 8, 1900, authorized the selection of four additional nurses, chosen from 190 volunteers, for similar duty. These were D. Hurcomb, M. Horne, M. C. Macdonald, M. P. Richardson. Militia Order No. 20, dated January 25, 1900, set forth that these nurses "are accredited as Lieutenants with the pay and allowances of that rank."

In the Army List, the four nurses who sailed to South Africa with the 1st Contingent are shown as attached to the 2nd special service battalion of infantry, and the four of the 2nd Contingent to the brigade of field artillery. Upon their return, January 8, 1901, the director-general recom-

mended that the cadres of a nursing service be inaugurated in connexion with the Militia, and that positions therein be granted to these women and to other graduate qualified nurses. On August 1, the nursing service was organized as an integral part of the Army Medical Corps. The first members were: G. Pope, M. Affleck, E. Russell, D. Hurcomb, M. C. Macdonald, M. P. Richardson, F. E. Fortescue. On February 1, 1902, the names of M. Smith and A. W. Scott were added. Later, Nurses G. Pope, S. Forbes, D. Hurcomb, and M. C. Macdonald were nominated for further service in South Africa, reinforced by Nurses M. Smith, F. E. Fortescue, F. Cameron, and A. W. Scott. The party left Halifax by Liverpool for Cape Town, November 27, 1901, and returned to Canada in July 1902.

Upon the reorganization of the Army Medical Service in July, 1904, the establishment of the nursing reserve was raised to 25; these nurses were to be granted the relative rank of lieutenant with the pay and allowances of such rank, but in no case was their designation to be other than that of Nursing Sister.

From the reserve thus formed, were selected in the autumn of 1906 Nursing Sisters G. Pope and M. C. Macdonald, for appointment to the permanent corps; they were posted for duty at the military hospital in Halifax, where the sick of the garrison were admitted for treatment, and the orderlies of the corps received instruction in nursing duties. So gradual was the growth of the service that in August, 1914, it contained only five,—one matron and two nursing sisters in Halifax, one in Quebec, and one in Kingston. The reserve had increased to 57, these being chosen from civilian nurse applicants of suitable qualifications. At the garrison hospitals schools of instruction had been organized, where members of the reserve attended in turn for a period of one month; after a written and oral examination, their

appointment was confirmed. In the summer of 1914, the school was held during the annual training camps at Niagara and Petawawa.

The entire nursing service, permanent and reserve, was administered by the director-general under rules and regulations based on those of the British nursing service. In 1911, a nursing sister was sent to England for six months, to make a study of the system in British military hospitals.

On August 17, 1914, Matron M. C. Macdonald took over the duties of the department in Ottawa. Offers of voluntary service from thousands of nurses and other women in Canada and the United States were received. Military Districts were communicated with, and tentative lists of suitable applicants were prepared. On September 16, 1914, the order to mobilize nursing sisters was received; those selected were notified by telegram, and ordered to report at Quebec on the 23rd; they were billeted at the immigration hospital, where agents for outfitting and equipment soon began to arrive. A medical board was convened; the nurses were medically examined, attested, vaccinated, and inoculated. The papers were similar to those for officers.

On September 29, Matrons Macdonald and E. B. Ridley with 99 nursing sisters embarked on the *Franconia*. There was a definite lack of official formality in the parade state. At the last moment certain civilian women appeared for embarkation with no better credential than a verbal message or a personal telegram. A few women anxious to serve but lacking professional training were afterwards taken on the strength as "home sisters," and added much to the comfort of the nurses.

Upon arrival in England, Matron M. C. Macdonald was granted the relative rank of major on November 4. The sisters attended daily at military hospitals, some for

instruction, some for duty. Matron Ridley with a party of 34 left for France with No. 2 Stationary Hospital; twenty were detailed to British hospitals. One of these, E. Campbell, was the first in the service to receive a military award.

Under an order dated August 28, 1917, a definite establishment of personnel was authorized to the strength of 2,003 nurses and 27 matrons, with a reserve of 203. For units in the field the allowance was 100 nurses for general, and 40 for stationary hospitals; 25 for casualty clearing stations. In England the number was less by 10 per cent, but in every case an increase or decrease was allowed according to bed capacity. The voluntary supply of trained nurses from Canada was at all times in excess of the need; 313 were in the English service, many in the American corps, and a large number in civil organizations.

Certain Canadian nursing sisters had developed an aptitude for giving anaesthetics. There was nothing new in the procedure. At the Mayo clinic in America the employment of women for the purpose was habitual. As early as March, 1915, Nursing Sister M. Parks, M.D., was giving anaesthetics at No. 2 Stationary Hospital, afterwards at No. 1 General, and at a casualty clearing station. Nursing Sisters O. G. Nicholson and M. C. Stewart were similarly skilled, even employing the intra-tracheal method. In January, 1918, the English service followed this example, and opened a three months' course of training. Seventeen Canadian sisters already trained were attached to various units for a final month, and then posted to casualty clearing stations for permanent duty. The highest record was made by M. C. Stewart, namely 29 general anaesthetics in one day, and 345 in a month.

Ample provision was made for those sisters who fell sick in the service at hospitals designated for the purpose.

In London a residential club was established by the Daughters of the Empire and access was free to the American nurses club. Various convalescent homes were opened on the French Riviera, which alone offered hospitality to 327 sisters. There were also homes under Imperial auspices in Normandy and Britanny for all sisters in the allied armies.

The administration of the nursing service overseas remained under the separate control of the Canadians acting in liaison with the War Office. Imperial regulations were closely observed if not always followed in detail. Close connexion was kept with the service in Canada, closer still when Matron E. C. Rayside was dispatched to Ottawa as Matron-in-Chief for Canada.

On transfer to France, members of the service came under the control of the Matron-in-Chief, British Armies in the Field. This matron, E. Maud McCarthy, was on the staff and visited the Canadian hospital units. Through her department recommendations and correspondence were passed concerning the various nursing services of the force, by which transfers, routine and sick leave were arranged. In her intercourse with the Canadian authorities Matron McCarthy commanded the highest regard; the relation between the two services was always admirable. Matron Macdonald made many visits to France to ensure harmonious co-operation. The chief assistants to the Matron-in-Chief at various times in London were Matrons M. O. Boulter, F. Grand, I. A. Cains, Nursing Sisters V. C. Nesbitt, M. H. Forbes, G. Muldrew, A. E. Bruce, W. E. O'dell.

The nursing service being an integral part of the medical services, no attempt has been made to segregate its history. Continual reference to its place and importance is made in the appropriate chapters. Of the nursing-sisters 6 were killed or died of wounds; 6 were wounded: 15 were

drowned by enemy action at sea; 18 died of disease while serving. They received 328 decorations with 50 foreign; 169 were mentioned in despatches, and 76 were brought to the notice of the Secretary of State for War.

### The Dental Corps

Good teeth to a soldier in these days of luxurious rations are not so important as they were in times when the only test of food was its hardness. As early as November, 1914, instructions were issued in the English service that no man was to be discharged on account of loss of teeth if by treatment he could be made fit to remain in the service. In January, 1915, men with defective teeth might be attested if they were willing to receive dental treatment; in February a recruit might be passed "subject to dental treatment."

These instructions presupposed the existence of dentists. There were not enough dentists in the world, and their distribution was unequal. The United States contained one dentist to 2,365 of the populaton; Canada, one to 3,300; Ontario, one to 2,238; Quebec, one to 6,126; England, one to 7,014. In England there were many unregistered dentists, but they confined themselves narrowly to the specialty of pulling teeth, with the result "that men had their teeth extracted unnecessarily and were held back from drafts until their mouths were ready for dentures."

For the English service 12 dentists were sent to France in November, 1914; the number was increased to 20 in December; to 463 in December, 1916; to 849 at the time of the armistice. In March, 1918, an inspecting dental officer was appointed to the staff of the Director-General, and he reported that 70 per cent of the recruits required

treatment, the number each month being 136,150. The "many suggestions" contained in his report were embodied in an Instruction, but as the date was October, 1918, not much benefit could have arisen from them.

Sir Cuthbert Wallace, one of the consultants with the British Army, gave generous praise to the Canadian dental service in the words, "The Canadians had a very perfect dental organization. Their dental surgeons were attached to the ambulances, and did an immense amount of work in the forward area, even to the provision of gold plates. Their organization is one that we might copy to advantage".

The Canadian Army Dental Corps was organized early in 1915 to attend to all dental matters affecting the personnel of the Overseas Military Forces of Canada. From the outset, however, individual dental officers had been attached to all units on the lines of communication; it was not until August 1915, that they were permanently attached to field ambulances. From July, 1915. when the corps began operations overseas until December 31, 1918, the number of operations amounted to 2,225,442, including 96,713 operations performed on Imperial troops who, from casualty or from other causes, came within the sphere of the corps. This number included 49,449 treatments for trench mouth, and this volume of work was accomplished by a comparatively small number of qualified dental officers and their assistants. In England, the administrative headquarters were in London, where the Director, Colonel J. A. Armstrong had the assistance of a deputy director and a deputy assistant director.

In France, the personnel of the corps carried on their work mainly at field ambulances, casualty clearing stations, general and stationary hospitals, in the forestry units, in the various units of railway troops, and at base camps.

These widely dispersed duties were performed under the supervision of the deputy-director of medical services at Canadian corps headquarters, who forwarded reports on all dental work to the director of medical services in London, where they were accessible to the director of the dental services.

In England, clinics were established at the various Canadian training centres, command and discharge depôts, special hospitals, and segregation camps; in London for the personnel employed at the different Canadian administrative offices, and for officers and men on leave from France requiring emergency treatment.

Every Canadian soldier on arrival in England, while passing the prescribed time at a segregation camp, received dental inspection and, if time permitted, his needs were attended to. If the work could not then be completed, indications for further treatment followed the soldier to whatever camp he might be sent, and there the work was continued. Finally, he was again examined before being placed on draft for France, and either was passed as fit or made so before leaving.

In addition to the general clinics which cared for most of the work there were special clinics resembling the one at the International Co-operative Institution at Queen's Hospital, Frognal, where patients who had received injuries to the nose or chin received the best treatment that medicine and dentistry could provide. By a combination of facial surgery and mechanical appliances injured parts were restored and lost parts replaced, so that the patient was able to chew his food, and his personal appearance was improved. The problem presented by numerous cases of fractures of the jaw became a serious one, and it was necessary to institute a special clinic at the Ontario Military Hospital, Orpington, to deal with this type of casualty, and

excellent work was done in restoring to patients the lost function.

Previous to the war, many officers and men had been fitted by their private dentists with gold bridges and other dental appliances; in numerous cases these had to be replaced or repaired. To meet this situation, the necessary arrangements were made whereby, at no extra cost to the public, this special work could be done; the patient signed a form which authorized the paymaster-general to deduct from his pay the bare cost of the material used.

The personnel of the corps increased in proportion to the growth of the forces, and expanded its sphere of professional usefulness according to the demand upon its services. The strength on first going overseas was 30 officers, 34 non-commissioned officers, and 40 other ranks. At time of the armistice the strength had increased to 223 officers, 221 non-commissioned officers, and 238 other ranks. Of this number there were in France 76 officers, 76 non-commissioned officers, and 64 other ranks; in England 147 officers, 145 non-commissioned officers, and 174 other ranks.

The cessation of hostilities immediately reversed the aim of the corps. Instead of making men dentally fit for war the corps devoted its activities to making men dentally fit for peace, and every soldier returning to Canada was accompanied by a document giving his exact dental condition at the date of his last inspection before embarkation.

During the years of their service the 2,555,442 operations which the dentists of the corps performed included: fillings, 933,765; treatments, 355,924; dentures, 164,543; prophylaxis, 187,110; extractions, 526,113; devitalizing, 87,987. During the year 1918, alone, they cared for 8,546 cases of "trench mouth," and these received 49,449 treatments.

The original proposal was that the dental service should operate parallel with the medical service in the field. This was found to be impracticable, as the medical service could not divest itself of responsibility for the health of the troops. By extorted consent the dental officers were then attached to the existing medical formations, and in effect became an integral part of the unit; a laboratory was established at corps headquarters as the principal dental depôt, where all the necessary appliances were made with incredible speed by dental mechanics.

The dental profession in Canada made sacrifices for the good of the service quite comparable with those made by the medical profession. Their toil was hard and unremitting. They had no " quiet spells," and their work was often done in the most forbidding circumstances. In times of stress they took a place with their medical fellow-workers; and by their voluntary aid many a field was the better cleared. In this service the names of Majors B. L. Neiley, O. A. Elliott, J. Blair, of Captains F. W. B. Kelly, G. S. Cameron, J. B. Morison, and J. Clark will be recalled.

### Radiography

Radiography found a new value in recording the progress of healing in fractures and in discovering the site of a foreign body. By stereoscopic skiagrams and by two pictures taken on planes at right angles to one another a vision of the foreign body was produced; and by a new method the distance of the missile below the surface could be measured. In October, 1914, Mr. Paul Wigny, director of the Rouen Electric Light Company, evolved a formula and chart which was applicable to all cases. The technique was developed by Davidson, Hampson, and Curtis Webb.[1]

Capt. A. H. Pirie of the Canadian service devised a rapid method of localizing rifle bullets or shrapnel balls

from one radiograph on a single plate. He prepared in advance a chart showing pictures of bullets at varying distances. As the bullet in the tissues casts a shadow of a width proportionate to its distance from the plate it was only necessary to measure the picture and compare it with those whose distance was already established. This method was available only in cases where the size of the bullet in the tissues was uniform with the one from which the chart was constructed.[2]

### The Mobile Laboratory

The mobile laboratory is the best testimony to that inter-relation of the Canadian medical service with the corresponding services in the British and other Dominion armies. Any one laboratory served all alike, and no problem was too hard for it. The Canadian mobile laboratory, No. 5 in the general series, was the equal of the best in the scientific accomplishment of its personnel. This unit was invented September 10, 1914, under the designation of the "Canadian Army Hydrological Corps and Advisers on Sanitation". G. G. Nasmith was in command as lieut.-colonel; R. E. Wodehouse as major. Captains F. B. Bowman, A. M. Cleghorn, and F. A. Dallyn joined later.

When the unit was changed to conform with requirements and went to France, all these officers except Colonel Nasmith were released; their place was taken by Captain A. C. Rankin from Alberta, a trained pathologist who had been the adviser in hygiene and epidemiology to the king of Siam, by Captain A. W. M. Ellis, a brilliant scientist from Toronto and the Rockefeller Institute, and Capt. W. Tytler. Captain Bowman afterwards had charge of the general laboratory at Folkestone, then of a mobile laboratory in the Italian expeditionary force, and was finally

attached to the director of medical service as pathologist on the lines in France. It was he who first discovered the organism which causes "trench-mouth".

The mobile laboratory set out to perform duties that were quite definite. Its business was to examine all morbid products from the hospitals, to assist in the diagnosis of disease and ascertain the nature of infection in wounds; to investigate new forms of epidemical sickness, and prevent or check its progress among the military and civil population. Carriers of typhoid were relentlessly pursued, and they were found in the most unexpected places, even in regimental kitchens. The Belgian villages were centres of enteric infection, and early in 1915 there was a definite epidemic with 8,000 cases and 2,000 deaths amongst the inhabitants, which spread to the troops. The sick were sought out and evacuated, a work in which the English Society of Friends performed an honourable and silent part. Wells of water were purified or closed, and whole villages were freed from infection. These laboratories were accessible to regimental officers and ambulances at the extremest front, and their services were always in demand.

The first British mobile laboratory arrived in France in October, 1914. It was nothing more than a caravan which had been stripped of its accessories and fitted with apparatus for research. The officer in charge was provided with a small motor car which gave him access to all parts of the area. In time these units lost their mobility and were installed in a proper building. The hospitals and even the casualty clearing stations developed their own laboratories as the work became too vast for a travelling unit.

The Canadian Mobile Laboratory became stationary first at Merville and then at Bailleul. This unit with officers and other ranks arrived in Merville on March 26, 1915, and began to serve the IV Army Corps of which the

1st Canadian Division was a part. Their service soon extended to the First Army, and early in July the whole region north of la Bassée was allotted to them. This area contained the Indian troops with their strange diseases. In March, 1918, the German advance forced a move westwards; after repeated changes of position, to la Reule, Blendecques, Arques, Crouy, Dury, Proyart, Tincourt, Roisel, and Bohain, the unit ultimately operated in Maubeuge. At the end of May a branch, opened at Eu, spent a month investigating diphtheria in the 35th American Division.

The work done in the laboratory was of great scientific importance. Captain Rankin investigated malaria. He determined the presence of two anopheline mosquitoes, and during the year discovered thirteen new cases of malaria. He was one of the first to recognize "trench fever" as a specific disease. Captain Ellis took an immediate place as an authority on cerebro-spinal meningitis.

### The Sanitary Section

The study of sanitation and the preservation of health is not the province of the medical services alone; it is incumbent on every officer and soldier.[3] The sanitary section exists to direct and supervise. This is a mobile medical unit with one officer and 27 other ranks. To each division a sanitary section was attached, and it moved with the main body. Early in 1917, sanitary sections became army troops. The army area was divided into sub-areas in each of which a sanitary section was placed, and it remained there indefinitely. This system did not apply to the Canadian service. The sanitary sections became not army but corps troops. The corps area was divided into five sub-areas; each one was occupied by a sanitary section which did not move with the division but did move with the corps.

No. 1 Sanitary Section remained mobile, and operated a workshop for the manufacture of equipment. In each of the areas a sanitary school was established, which medical officers were obliged, and combatant officers encouraged, to attend periodically. The sanitary personnel of the battalions were trained in these schools for a period of five days. They were taught sanitation and disinfection; they were trained to build conveniences for the forward areas and the front line. These appliances were ingenious yet simple. Capt. R. St. J. Macdonald supplied drawings and descriptive text of every appliance that could be required, and the Oxford Medical Publications under authority issued a book in his name, which became a general guide.

In each sub-area was a sanitary inspector who called to the attention of commanders and town majors any departure from standard practice. One non-commissioned officer and one man patrolled continually a small area assigned to them. The officer commanding the section was the sanitary adviser of the assistant director of medical services in the division, and all were specially qualified for the task. Major J. A. Amyot was professor of hygiene in the University of Toronto; Major T. A. Starkey at McGill, and Capt. R. St. J. Macdonald assistant in the same university. The remainder had been civic health officers of wide experience.

In the Canadian service there were nine sanitary sections of which the first five operated in the field, and the remaining four in England in areas occupied by Canadian troops. The following statement shows the successive officers commanding these units in the field: No. 1—Majors R. E. Wodehouse, J. A. Amyot, Captain W. C. Laidlaw, Major A. B. Chapman; No. 2—Major T. A. Starkey, Capt. T. A. Lomer, Major W. A. Richardson; No. 3—Captains R. St. J. Macdonald, H. Orr; No. 4—Captains R. R.

McClenahan, S. J. Sinclair, N. McL. Harris; No. 5—Captain D. W. Gray.

### The Naval Service

The personnel of the Royal Canadian Naval Medical Service during the war consisted of three staff surgeons, eight surgeon lieutenants, and four surgeon probationers. In addition, 24 temporary surgeons and 142 surgeon probationers were serving in England and English waters. These surgeon probationers were first or second year medical students who took a short course in the naval hospital and were sent to sea as medical officers in destroyers or other ships too small to warrant carrying a qualified surgeon.

Surgeon J. A. Rousseau was in command, and all but two of the personnel were Canadians. The naval hospital at Halifax had a staff of three surgeons, two nurses and ten attendants, with accommodation for 50 patients. At Sydney a surgeon lieutenant, a probationer and a sick berth petty officer were stationed for the treatment of officers and men of the patrol area based on that port.

### Hospital Ships and Enemy Action

In the work of evacuating the sick and wounded to Canada, the Service employed 5 hospital ships, which made an aggregate of 42 voyages. The names of the vessels, number of voyages made, and number of patients carried were as follows:—

| | | |
|---|---|---|
| *Araguaya* | 20 voyages | 15,324 patients. |
| *Essequibo* | 9 " | 5,106 " |
| *Llandovery Castle* | 5 " | 3,223 " |
| *Letitia* | 5 " | 2,635 " |
| *Neuralia* | 3 " | 1,950 " |
| | 42 " | 28,238 |

In addition 5 voyages were made by as many transports carrying 2,369 convalescent patients.

When sixteen hospital ships had been destroyed by submarines and mines, the melancholy conclusion was forced upon the Admiralty that the Red Cross and the Geneva Convention were no longer a protection from this enemy. Up to this time hospital ships were painted white with a green band from stem to stern and a red cross amidships. By night a row of red and green lights burned around the whole circuit of the ship. In the new circumstances that had arisen all distinctive marks were removed and the hospital ships sailed as ordinary transports. The equipment was unchanged, but they were designated as ambulance transports; they were armed to repel attack, were supplied with naval escort, and sailed under the Red Ensign. One achievement of the German Navy was to banish the Red Cross from the seas; the White and the Red Ensign remained.

When war broke out there was not in the British Navy a hospital ship. There had been one, but she was wrecked on June 19, 1914. This was the *Maine*, originally fitted out by a group of American women for service in the South African war and subsequently acquired by the Admiralty. But within four days three ocean steamers, originally designed with such an emergency in view, were converted into hospital "carriers," with medical and nursing staffs complete and full equipment of stores, cots, and bedding. In three weeks six additional ships were in commission, fitted with swinging cots to accommodate 220 patients and space for 300 emergency cases. It was January 3, 1919, before an American hospital ship became available for the American army, when 245 of the worst cases were embarked at Plymouth.

The cot in the navy corresponds with the stretcher in the army, and from the time the man is placed in his cot after being wounded he never leaves it until he is put to

bed in hospital. The new standard pattern cot was made of canvas stretched and laced over a wooden frame. At each end was a lanyard and eye so that the cot might be slung. It was a complete bed with mattress, pillow and two blankets, and the canvas sides were ample enough to overlap as additional covering for the occupant. The naval ambulance and ambulance train were the same as those employed in the army except for fittings to receive cots instead of stretchers.

For the disinfection of hospital ships a clever device was employed. The *Aquitania* was fitted with a mechanism for generating hypochlorites from the electrolysis of sea water, using the ship's electric current. The saving in carbolic acid in one voyage alone was sufficient to justify the installation, and the process was so thorough that no cases of secondary infection occurred.

The *Llandovery Castle,* assigned to the Canadian service was sunk by submarine June 27, 1918. Of the entire ship's company of 258 only 24 survived; and of these only six, one officer and five other ranks, were from the 97 in the medical personnel. Amongst the lost was the whole complement of nursing sisters, 14 in number. The attack was made with utter savagery; even the escaping life-boats were pursued and sunk.

The submarine was No. 86; the commander was First-Lieutenant Helmut Patzig; the first and second officers of the watch were Dithmar and Boldt. Patzig was a native of Dantzig. When war criminals were being sought, he had disappeared; but as his country had then been separated from Germany by the Treaty of Versailles he was no longer amenable to German jurisdiction even if he could be found. The Germans " of their own initiative " arrested Dithmar and Boldt and put them on trial with other war criminals at Leipzig. The Court found that " the act of Patzig is

homicide"; Dithmar and Boldt were held to be accessories, and they were sentenced to four years' imprisonment. The judgement of the Court sets forth all the facts, and the record confirms in every detail the account given by the survivors.[4]

On February 4, 1915, notice was given in the *Imperial Gazette* signed by v. Pohl, chief of the German naval staff, that "the waters around Great Britain and Ireland are declared in the war zone," as from February 18. On the same day instructions were given to commanders that "hospital ships are to be spared; they may only be attacked when they are obviously used for the transport of troops from England to France."

The German claim to justification for a departure from this provision is best recorded by Admiral Scheer.[5] "On October 17, 1914, a half flotilla engaged in laying mines in the Downs was attacked and destroyed by the English cruiser *Undaunted*. The English saved as many of the survivors as possible. After we received the first wireless message that action had been begun, no further news of the torpedo boats was forthcoming, and as we had therefore to assume that they had been lost, we sent out the hospital ship *Ophelia* to pick up any survivors. However, the English captured her and made her prize, charging us with having sent her for scouting purposes, although she was obviously fitted up as a hospital ship and bore all the requisite markings." The trial before the Prize Court left no doubt that the *Ophelia* had been used as a signalling ship, but this is the reason given by Admiral Scheer why, "we also considered ourselves released from our obligations and with far more justification took action against hospital ships which, under cover of the Red Cross flag, were patently used for the transport of troops."

Such horrid reasoning from a baseless charge excited even more horror in the mind of the world than the horrible outrage itself. The circumstances, as related by the survivors from the *Llandovery Castle* were incredible to those who were not even yet aware of the desperation into which the German military mind had sunk. The life-boats filled with survivors 116 miles from land were rammed and fired on by the German commander. This sacrifice of women profoundly moved the heart of the world. The Imperial Chancellor was right when, on June 30, 1916, he informed the Commander of the Fleet, that he was against a form of warfare, " which would place the fate of the German Empire in the hands of a U-boat commander."[6] The thing he feared had come to pass, and the fate of the German Empire from that day was fixed.

By similar reasoning it was an easy step to warfare against hospitals on land, and two such attacks were made in due course. Etaples was a congested military area from the beginning of the war. It was a military centre long before the war, and the Germans were not likely to be ignorant of its importance. It was the *Portus* of the Romans. Here it was that Julius Caesar assembled his troops for the invasion of Britain, and Napoleon assembled his troops for the invasion of England, concealing his flotilla in the estuary of the Canche. In mediaeval times it was the main depôt of trade across the channel, and has always been the beloved of artists.[7] Etaples was now the centre of much Canadian hospital activity. No. 1 General Hospital was installed May 17, 1915: No. 2 followed; then No. 7; No. 5 Stationary completed the complement, but there were also many English hospitals in the area.

On May 19, 1918, the enemy raided these hospitals from the air, and again on May 21, 30, and 31. At the moment there were in one hospital alone upwards of a thousand patients, and to make the situation more dreadful,

three hundred were suffering from fractured femurs, and incapable of movement. Incendiary bombs were dropped; the buildings burst into flames; and by their light the enemy aeroplanes were able to descend close enough to employ machine guns upon those engaged in rescuing the patients. The first raid lasted two hours. In the four raids the casualties were 15 patients killed and 67 wounded; personnel, 54 killed and 94 wounded. Of the killed three were nursing sisters, and of the wounded seven. No. 5 Stationary Hospital suffered most casualties. Four other ranks, and nine patients were killed; three officers, 16 other ranks, and 37 patients were wounded.

Doullens, where No. 3 Canadian Stationary Hospital was installed, suffered in like manner on the night of May 30. In the retreat of March, Doullens became the natural clearing centre for a front of fifty miles, and from March 21 to July 10, 93,000 casualties passed through that station. In the case of Etaples there might possibly be for the enemy the excuse that other arms of the service were concentrated in that area: the reinforcement camp, which at times contained 10,000 troops adjoined the hospital. But at Doullens the old fort which housed the hospital lay well apart from the town, and was surrounded by fields. It had from the beginning been used for hospital purposes alone, and there was no railway or military material in the vicinity. The raid began a few minutes after midnight with a flare and bomb. The hospital was struck. An operation was in progress at the time. The two surgeons, three nursing sisters, four patients and 16 orderlies were killed; a sister and 13 other ranks were wounded.

### The Training School

The military training of medical officers and other ranks was provided at a depôt in the Shorncliffe area. To this unit all were posted, pending a fresh assignment to

duty, and the nursing sisters in England were carried on the roster. The strength of the depôt varied, but at times it reached 1,000 officers and other ranks. The men were of all categories. Some were awaiting draft, and some commissions. Others were available for transfer to units in England; a few were unfit and awaiting rise in category or discharge.

The depôt was originally opened at Tidworth under Lieut.-Colonel F. L. Vaux. In February, 1915, it was transferred to the Shorncliffe area in which it occupied various places. The final location was in a commodious barracks at Shorncliffe where the training school reached its highest efficiency under Lieut.-Colonel E. G. Mason who was in command for nearly two years until it was disbanded June 6, 1919. The unit had in succession eleven officers commanding, including Lieut.-Colonel J. D. Brousseau whose tenure of office was over a year.

The training was comprehensive and thorough. There was regular instruction in the organization of the medical services in field and hospital, in the procedure of medical boards, in the duties of officers assigned to different units, in sanitation, surgery, and infectious disease. For officers and men alike there was military training in squad and company drill, in stretcher drill, in physical exercises, and route marches. Of a more technical nature was the building of aid posts, the training in first-aid and nursing duties, in methods of gas warfare, artificial respiration, and cooking for the sick. The school was of inestimable value in making newly commissioned officers familiar with the inner nature of military discipline.

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[1] *Brit. Med. Jour.* Special No. 1917, p. 72.
[2] Arch. of Radiol., October, 1916.
[3] *Field Service Regulations*, part II, 1914, Sec. 83.
[4] *The Leipzig Trials.* Claud Mullins, of Gray's Inn. Witherby. High Holborn. London, 1921.
[5] *Germany's High Sea Fleet.* Admiral Scheer, trans. Cassell and Company, 1920, pp. 61, 62.
[6] Ibid. p. 245. [7] *The War Story of the C.A.M.C.* Adami, p. 237.

## CHAPTER XX

### THE MORTALITY OF WAR AND STRENGTH OF SERVICES.

The mortality of war, the incidence of disease, and the effort made by the medical services to combat sickness by hospital treatment can best be set forth in a series of tables requiring little additional comment, comparison, or inference. In the Canadian army the ratio of deaths from sickness to deaths from wounds was less than 10 per cent, whereas in the South African war the ratio was 65 per cent; in the Russo-Japanese war 40 amongst the Russians, and 31 amongst the Japanese. In the present war the ratio was 51·8 per cent in the American army.

The obvious inference from this record is fallacious. It does not follow that this low ratio in itself proves the superiority of the Canadian medical services in this war. In a campaign such as the present one where the number of wounded was large and the wounds severe the deaths from disease will seem proportionately few. The more just method for arriving at the amount of sickness is to compute the admissions to hospital in proportion to the troops engaged. Even this is not final, since other circumstances, such as lack of accommodation and native endurance of

pain will govern the admissions. Indeed, the statement as it stands might equally mean not that the sick were few and well treated, but that the treatment of the wounded was bad. If comparisons are to be made, the things compared must be in similar categories.

The total number of cases receiving hospital treatment up to August 31, 1919, was 539,690 of which 144,606 were battle casualties and 395,084 of disease. This gives a rate for all causes, 1290·96 per 1,000 troops; for disease 945·05; for battle casualties 345·90 per 1,000 troops. This number does not include soldiers treated for minor ailments, civilians of various kinds attached to the army, or the civil population in occupied areas.

Taking the total number of troops overseas as 418,052, and the admissions for disease as 395,084, the rate of admission was 945·05 per thousand. This does not mean, however, that nearly every man at one time or another was admitted once, as some were admitted several times. It is only when we come to consider the number of deaths that we are upon absolutely sure ground.

The total number of deaths from all causes was 56,638 of which 51,678 were due to battle casualties, and 4,960 to disease and other causes. This gives a death rate for the whole period for all causes, 135·47 per 1,000 troops; for battle casualties 123·60; and for disease 11·86 per 1,000 troops.

The component parts of these statements can readily be shown in tabular form. The figures given for Canadians are subject to technical revision, but for purposes of comparison they may be taken as correct. Any apparent discrepancies are due to a variation caused by such customary schedules as "killed accidentally," "suicides," "died at sea."

TOTAL CASUALTIES OVERSEAS FROM DISEASE AND WOUNDS

To March 31, 1923

| —— | Officers | Other ranks | Total |
|---|---|---|---|
| Cases of disease | 19,100 | 375,984 | 395,084 |
| Died of disease | 175 | 3,650 | 3,825 |
| Percentage of deaths by disease to number of cases of disease | ·91 | ·97 | ·96 |
| Cases of wounded | 6,347 | 143,385 | 149,732 |
| Died of wounds | 819 | 16,363 | 17,182 |
| Percentage of deaths by wounds to number of cases of wounds | 12·90 | 11·41 | 11·60 |

2. DEATHS OVERSEAS

To March 31, 1923

| —— | Officers | Other ranks | Total | Percentage |
|---|---|---|---|---|
| Disease and other causes | 297 | 4,663 | 4,960 | 8·75 |
| Killed in action | 1,776 | 32,720 | 34,496 | 60·92 |
| Died of wounds | 819 | 16,363 | 17,182 | 30·33 |
| Totals | 2,892 | 53,746 | 56,638 | ..... |

The significant fact in these statements is that the deaths from disease were less than 9 per cent of all deaths, and less than 1 per cent of all cases of disease. Upon this basis a comparison with other wars can justly be established. In the thirty-one months of the South African war there were lost by death from wounds 965 non-commissioned officers and men, and 13,590 from disease; 72,551 were invalided to England. For every man admitted to hospital on account of wounds, seventy were admitted for disease.

### 3. COMPARISON OF DEATHS FROM WOUNDS AND DISEASE

| ——— | Force | Died of disease | Killed or died of wounds | Ratio | |
|---|---|---|---|---|---|
| | | | | Disease | Wounded |
| South African..... | British..... | 14,653 | 7,792 | 65 | 35 |
| Russo-Japanese.... | Russian..... | 20,890 | 31,458 | 40 | 60 |
| | Japanese..... | 27,000 | 59,000 | 31 | 69 |
| Present War..... | Canadian.... | 4,960 | 51,678 | 8·7 | 91·3 |
| | American.... | 51,532 | 47,940 | 51·8 | 48·2 |
| | British*..... | 32,423 | 532,292 | 5·7 | 94·3 |

*These figures are for the Western Front only, and include Dominion and Colonial troops. (Chronology of the War, Vol. III, 1918-19).

### 4. MISSING TO AUGUST 31, 1919

| ——— | Officers | Other ranks | Total |
|---|---|---|---|
| Missing, believed killed..... | | 76 | 76 |
| Wounded and missing..... | 1 | 205 | 206 |
| Missing..... | 24 | 4,062 | 4,086 |
| Grand totals..... | 25 | 4,343 | 4,368 |

All these "missing" have finally been accounted for, March 31, 1923.

### 5. COMPARATIVE STRENGTH OVERSEAS
on December 31

| ——— | Total in all arms | Medical services |
|---|---|---|
| 1914..... | 29,890 | 1,351 |
| 1915..... | 87,051 | 5,231 |
| 1916..... | 227,494 | 9,788 |
| 1917..... | 237,871 | 12,253 |
| 1918..... | 236,770 | 12,243 |

### 6. NUMBER OF TROOPS SENT OVERSEAS

| | |
|---|---|
| During 1914 | 30,999 |
| " 1915 | 84,334 |
| " 1916 | 165,553 |
| " 1917 | 63,536 |
| " 1918 | 73,630 |
| Total | 418,052 |

### 7. STRENGTH OF MEDICAL SERVICES OVERSEAS

| | As on June 1 | | | | November 30, 1918 |
|---|---|---|---|---|---|
| | 1915 | 1916 | 1917 | 1918 | |
| Officers | 378 | 817 | 1,319 | 1,386 | 1,451 |
| Nursing Sisters | 535 | 915 | 1,486 | 1,829 | 1,886 |
| Other ranks | 3,620 | 6,913 | 11,327 | 12,304 | 12,243 |
| Total Personnel | 4,533 | 8,645 | 14,132 | 15,519 | 15,580 |

### 8. STRENGTH OF R.A.M.C. FOR COMPARISON

| | Officers | | Other Ranks | |
|---|---|---|---|---|
| | Regular | Territorial | Regular | Territorial |
| August, 1914 | 1,279 | 1,889 | 3,811 | 12,520 |
| November, 1918 | 10,190 | 2,845 | 98,986 | 32,375 |

### 9. TOTAL CASUALTIES, CANADIAN MEDICAL SERVICES

| | Killed or died of wounds | Wounded | Died of disease |
|---|---|---|---|
| Officers | 30 | 99 | 31 |
| Nursing Sisters | 21 | 6 | 17 |
| Other ranks | 453 | 589 | 79 |

## 10. CANADIAN HOSPITAL ORGANIZATION AND VOLUME OF WORK

August, 1914, to August, 1919

| | Canada | Overseas | Total |
|---|---|---|---|
| Hospital units | 65 | 59 | 124 |
| Bed capacity | 12,531 | 36,609 | 49,140 |
| Admissions to hospital | 221,945 | 539,690 | 761,635 |
| Deaths in hospital | 1,516 | 21,455 | 22,971 |
| Ratio of deaths to admissions | ·608 | 3·9 | 3·01 |

## 11. UNITS IN ENGLAND

On June 1 each year, excluding headquarters and camp staffs.

| | 1915 | 1916 | 1917 | 1918 |
|---|---|---|---|---|
| General hospitals | 4 | 3 | 7 | 10 |
| Stationary hospitals | 0 | 3 | 0 | 0 |
| Special hospitals | 0 | 4 | 5 | 7 |
| Convalescent hospitals | 3 | 7 | 8 | 8 |
| Laboratory units | 0 | 0 | 2 | 1 |
| Sanitary sections | 1 | 2 | 4 | 4 |
| Medical depots | 2 | 3 | 3 | 1 |
| Hospital ships | 0 | 0 | 2 | 2 |
| Totals | 10 | 22 | 31 | 33 |

## 12. UNITS IN FRANCE AND ELSEWHERE

On June 1, each year excluding corps and divisional staffs. There is no change between June 1, and November 30, 1918.

| | 1915 | 1916 | 1917 | 1918 |
|---|---|---|---|---|
| General hospitals | 2 | 8 | 6 | 6 |
| Stationary hospitals | 2 | 4 | 4 | 6 |
| Casualty clearing stations | 1 | 3 | 4 | 4 |
| Field ambulances | 3 | 6 | 13 | 14 |
| Sanitary sections | 2 | 4 | 4 | 5 |
| Medical depots | 1 | 1 | 1 | 1 |
| Mobile laboratories | 1 | 1 | 1 | 1 |
| Totals | 12 | 27 | 33 | 37 |

## 13. SUMMARY OF GROWTH OF BED CAPACITY

| | As on June 1 | | | November 30, 1918 |
|---|---|---|---|---|
| | 1915 | 1916 | 1917 | |
| *England*— | | | | |
| Total beds General Hospitals | 624 | 3,367 | 5,951 | 11,447 |
| Total beds Special Hospitals | ..... | 1,413 | 2,320 | 4,184 |
| Total beds Convalescent Hosp'ls | 770 | 2,390 | 5,012 | 7,456 |
| Total, England | 1,394 | 7,170 | 13,283 | 23,087 |
| Total, France and elsewhere | 2,090 | 9,560 | 15,346 | 13,522 |
| Grand Total | 3,484 | 16,730 | 28,629 | 36,609 |
| Hospital Ships | ..... | ..... | 800 | 1,500 |

14. BEDS RELATIVE TO TROOPS

| Beds | Year | Total Troops All Arms | Number of beds per 100 troops |
|---|---|---|---|
| 3,484 | 1915 | 92,002 | 3·78 |
| 16,730 | 1916 | 239,732 | 6·97 |
| 82,629 | 1917 | 250,897 | 11·14 |
| 36,609 | 1918 | 250,415 | 14·61 |

The diseases in the German Army were almost parallel with those suffered in other armies; and to those who are familiar with the medical aspects of war there is something piteous in the similarity of experience which Otto Schjerning, chief of the field service of the medical corps, recounts in his introduction to the German official history. Trench fever, trench feet, tetanus, gas gangrene, influenza, paratyphoid, jaundice were known to the German medical officers also; and many other diseases besides, such as scurvy, smallpox, cholera, malaria, typhus, leprosy, and hunger oedema.

The loss in their service, too, was heavy. In May, 1918, their medical officers were 18,325 for a force of 5,028,161 troops, a ratio of 3·6 per thousand. During the war 1,325 died, that is 54·2 per 1,000 of the total strength. Of these 562 or 23 per 1,000 fell in battle or died of wounds; 2,149 were wounded, and 467 missing.

The total of their battle casualties was 1,531,048 killed in action, 4,211,469 wounded, and 155,013 dead of disease. The total sick in four years was 19,461,264, varying year to year from 1,010 to 1,530, and yielding an average of 1,209 per thousand. Of these the number returned to duty was 91 per hundred, all of which is nearly identical with Canadian experience.

More singular still, the record is almost identical in the French army. Of every 100 wounded or sick 1 died, 8 became unfit for further service, 3 became fit for home service only, and 88 became fit for service at the front. Of these 62 became fit in one month, and 26 in five months. About 20 became fit in less than a month, and only 3 required seven months treatment before being cured. The French killed were 1,121,000; invalided out were 800,000; and 2,689,500 was the definite total loss.[1]

[1] *Les Archives de la Guerre.*

# CHAPTER XXI

## DISEASES OF WAR

Typhoid—Dysentery—Cerebro-Spinal Meningitis—Jaundice—Trench Fever—Tetanus—Trench Foot—Trench Mouth—Other Infectious Diseases and Segregation Camps—Lice—Scabies—Shell-Shock—Self-Inflicted Wounds

In the diseases of war typhoid must by long tradition have the first place. In former wars it had this bad priority on account of its deadly prevalence. For the last time it shall have its old rank, as it is about to drop out of the nomenclature of military medicine. In the Canadian army during the whole period of the war enteric fever affected only 42 officers and 380 other ranks. Of these only one officer and 15 other ranks succumbed, a death rate of only 3·79 per cent; the percentage of incidence upon the whole force was infinitely small and could scarcely be observed. In the South African war the number of cases was 57,684; the deaths were 8,022.

Sanitary measures and inoculation accomplished this result. What share of the credit should be awarded to the one, and how much to the other is yet a matter for deliberation. As long ago as the South African war the practice of inoculating against typhoid fever was introduced according to the method devised by Sir Almroth Wright. The results were not convincing. In the Indian army the effect was more remarkable. The method was finally established by Sir W. B. Leishman; it was practised on a large scale by the American army in time of peace, and within the first year of war all Canadian forces in the field were inoculated.

In England the advisory board as long ago as the year 1912 strongly recommended that this procedure should be made compulsory upon all soldiers liable for foreign service. The Army Council preferred to encourage the soldier by "lectures and leaflets" rather than compel him to submit to this measure of safety for himself and his comrades. In the Canadian service, to avoid any difference of opinion among the troops an order was made, and the order was enforced without discussion.

The inoculation was with a vaccine of *B. typhosus* alone; typhoid fever disappeared but para-typhoid was noticed. A new vaccine was prepared in which *B. Paratyphosus,* A and B were added, and this triple vaccine, known as T.A.B., was used early in 1916. Both diseases were thenceforth under control. For this period absolute or comparative statistics of typhoid are unreliable. The diagnosis was uncertain. All men having been inoculated, the old method of diagnosis from the reaction of the serum was of no avail. The Research Committee applied their skill to this problem also, and established a laboratory at Oxford to develop the thesis formulated by Professor Dreyer, and the technique of himself and his colleague Ainley Walker, by which a diagnosis even in triply inoculated men could often be made by a series of successive observations at intervals of a few days. Blood cultures in early cases were of value; in some no diagnostic method availed.

### Dysentery

A war without dysentery is one of the strangest phenomena of military record; and yet Canadian medical officers served for their whole time on the western front and never saw a case. The Canadian troops in the eastern Mediterranean field were few, and they suffered from both the

amoebic and bacillary forms of the disease. In the autumn of 1915 dysentery was epidemic in the east, and returning troops were badly infected; but they were isolated at special centres in England, and the disease was checked by sanitary means. Shiga's bacillus as the cause of one form of dysentery has long been known, but no preventive means has been devised such as succeeded so brilliantly against typhoid and its allied forms, although mention should be made of the value of emetine in amoebic dysentery, and of emetine combined with iodine of bismuth in the treatment of carriers. From this disease there were 1,124 cases and 14 deaths.

### Cerebro-spinal Meningitis

The first case of cerebro-spinal meningitis in the Canadian army of which there is any record occurred at Valcartier late in September, 1914. It was observed by Lieut.-Colonel W. H. Delaney who was in charge of the medical wards and clinical laboratory of the Quebec Military Hospital. On the same day a second case was admitted. Spinal fluid was examined from both cases and was found turbid with intracellular diplococci. Lieut.-Colonel R. D. Rudolf who was in hospital at the time confirmed the diagnosis. Both patients died before receiving treatment with serum. Within the week two more cases were admitted. They were treated with serum, and recovered; one receiving eleven injections, and the other nine. Of these patients one came from the sappers, one from the artillery, and two from the infantry. A supply of Flexner's serum was obtained; it arrived after the troops had embarked, and was placed on the last freight transport where it was lost sight of.

Two cases were discovered at sea amongst the troops, and one in the ship's crew. In the camp on Salisbury Plain seven cases were observed before November 24, the

first being on October 18. Up to December 13, there were no new cases; then there was a fresh outbreak, and before the troops left Salisbury there had been 39 cases of which 28 were fatal. After the departure of the 1st Division for France cases occurred amongst the Canadian details that were left in England, and by May 1, 1915, there was a total of 50 with 36 deaths. The epidemic was carefully studied. Early in January a laboratory was set up in Bulford, and the Lister Institute detailed an expert official to assist in the study.

These sporadic cases were magnified to an epidemic by the Canadian newspapers, whose correspondents in the early days did not always obtain a proper perspective. In England at the same time a few cases of meningitis were discovered, and an official document gave currency to the belief that " the reports from the Salisbury Plain area suggest, not, indeed, that the Canadians imported a new disease into this country, for we have always had it with us in a sporadic form, but that they did introduce a virulent strain of the meningococcus, and were in some degree responsible for its spread."[1]

Colonel J. G. Adami was at great labour to disprove this allegation. He showed that as a result of its prevalence in England meningitis was made a notifiable disease in 1912; that in the next three years the cases were 104, 305 and 315; that in the last quarter of 1914 there were 41 military cases and 52 civil cases, including those in the forces from overseas, and 13 of them before the Canadians arrived; that there was no evidence that the Canadians introduced a particular strain of meningococcus, or that the strains isolated from Canadian cases differed in any particular from the strains procured from purely British cases. Lieut. Johnston, who studied the area where it was possible the Canadians might be implicated, reported that "the

three first cases of the disease on the Plain were amongst Canadians in October and November, 1914; but that only in 18 per cent of the other 63 cases could even probable association with Canadians be traced."

On the analogy of other infectious diseases the practice in England, and in France too, was to isolate all persons who had been in contact with certified cases. This isolation seems to have been useless, for examination of the throats of " contacts " was more nearly negative than in the case of persons who were not suspected. Of 349 contacts examined only four yielded a positive result. Eighteen different units contributed cases, and these were billeted in widely separate places.

Certain persons are " carriers " of the disease though they themselves may be immune, and it is obviously impossible to discover all of them in a large army. But it has never been proved that " carriers " propagate the disease. Curious confirmation comes from German sources. In the winter of 1915-16 an epidemic of cerebro-spinal meningitis broke out in Schwerin, and Much was deputed to co-operate with the local bacteriological authorities, including the Director of the Hygienic Institute in Rostock. Ten thousand examinations were made, and the carriers isolated. Ultimately enormous numbers of these were observed, but in no single case did any of them contract the disease. Soldiers from the front became carriers in a few days; but while the number of carriers increased, the number of cases of meningitis diminished. A report of these results was sent to the sanitary department of the army, but its publication was prohibited in that it was contrary to accepted teaching and common knowledge. The authors were ordered to send cultures to the Kaiser Wilhelm Academy for examination. A report was received that all cultures were contaminated, and only one in fact contained meningococci.

The author (Much) had, however, taken the precaution to send the same cultures to Zeissler of the Alton Bacteriological Station; to Pfeiffer, Director of the Hygiene Institute in Rostock; and to Dr. Schottmuller, in Hamburg. All three reported that the cultures were pure and typical meningococci. This discovery was communicated to the sanitary department and to the Kaiser Wilhelm Academy, but no answer was forthcoming, and the prohibition of the publication was confirmed.[2]

The study of cerebro-spinal meningitis continued unabated. Research was mainly directed towards identification of the various types, and isolation of the epidemic strains. The value of a serum was found to depend upon the identity of the strain employed to produce it with the strain that causes the epidemic. The American serum used at first in the Canadian service overseas was of little value; but a later serum prepared from current epidemic strains had some efficacy. By this time simple media for the growth of the organism had been devised; the chief epidemic strains were determined; their recognition was brought within the means of every pathologist. To isolate all carriers was impossible even if it were desirable; and now, under the authority of Lieut.-Colonel M. H. Gordon who was in charge of the research, only those carriers were isolated who bore epidemic strains.[3] He also observed that the carriers might be freed within two weeks if they were made to inhale a vapour of chloramine-T for a short time each day. Capt. Arkwright and Capt. A. W. M. Ellis of the Canadian service, Eastwood, Griffith, and Scott in civil life continued their research during the period of the war. In all there were 399 cases of the disease of which 14 were amongst officers, and 385 in other ranks. The deaths were 219, or 54·8 per cent of all cases.

## Jaundice

Jaundice as a symptom has always been known. As the most obvious symptom, it has given name to a disease which was described by Hippocrates himself, and has always appeared in armies. In the South African war there were 5,648 cases in five months. By the summer of 1915 the cases were so numerous that they were collected in a single hospital for purposes of study by Sir Bertrand Dawson and his colleagues.[4] As a result a form of infectious jaundice was recognized, in which the clinical and pathological features were constant.

Of even greater interest, the cause of the disease was discovered. This discovery was made by Japanese observers of whom Inada and Ido were the chief, in November 1914. They recognized in the liver of a guinea-pig that had been inoculated with the blood of a patient suffering from infectious jaundice a spirochaete to which they assigned the definition *ictero-haemorrhagica* so soon as they had proved it to be the specific cause of the disease.[5] This discovery gave fresh interest to the study of the disease, and in July, 1916, guinea-pigs experimentally infected were to be found as far forward as the field ambulances. One more disease was removed from the category of "pyrexia, unknown origin."

The cause of the disease having been ascertained, enquiry was directed toward the mode of infection. The Japanese affirmed that they were able to demonstrate the spirochaete in 38 per cent of field rats caught in areas where jaundice was epidemic, and they suggested that the infection was conveyed by their urine. Stokes in Flanders confirmed this observation in six rats out of fifteen examined.

Sir Bertrand Dawson and his colleagues contributed to "British Medicine in the War," issued by the *British*

*Medical Journal* in 1917, a record of all the circumstances connected with this disease and its diagnosis, which in manner and material is a model of historical writing. It would appear therefrom " that the rat acts as a reservoir for the infective agent, spreading the disease by means of its urine directly or indirectly," and that infection is further spread in the same way by the patient himself.

### Trench Fever

Trench fever came to be recognized as a new and definite disease towards the end of 1915, when Major A. C. Rankin of the Canadian service and Capt. Hunt published an account of thirty cases.[6] In February, 1916, Capt. McKee, Capt. Brunt, and Lieut. Renshaw established a relapsing variety, and reproduced the disease in volunteers by injecting blood from active cases. They determined that the injection resided in the corpuscles not in the serum, but they were unable to demonstrate any parasite.

The recognition of the disease came gradually. Very early in the war there were many cases of pain and stiffness in the muscles of the back and shoulders, which fell into the ambiguous category of myalgia. If the condition was accompanied by fever and pain in the bones of the legs, the case was described as influenza. But in time the cases increased in number and severity, and forced themselves upon the special attention of the medical service.

In a typical instance the man was suddenly affected with faintness or vertigo, frontal headache, and pain in the back, which so violently descended to the legs that the condition came to be known as " shin fever." By the time the patient arrived at the ambulance his temperature was 102 degrees, and the tongue furred; there was nausea and

constipation. The man was in much greater misery than the symptoms would appear to warrant, for the pulse was not above 80; there was no cough; the lungs were free; there was no albuminuria, and few at the front were skilled enough to determine if the spleen was enlarged. In certain cases the temperature rose to 104 degrees with accompanying stupor; but as a rule it fell to normal on the third day, and the man was discharged to his duty.

Upon close and more prolonged observation it was discovered that the fever recurred at quite definite intervals, but the interval varied in each case. In one case the temperature would fall to normal on the third day, rise on the sixth, and fall again on the ninth. In another case the relapse might occur after ten days of freedom, but the cycle was always regular—four, seven ten, or even thirteen days in different patients. The periods of normal temperature were interrupted by a sudden fever which might rise to 104 degrees and then gradually disappear. In most of the cases there was only one attack of fever; many had one relapse; but those who suffered from more than one were likely to remain sick for an indefinite period. As the disease continued, the fever lessened on each successive occasion; the intervals of freedom increased and finally persisted in recovery. No immunity was conferred; a man might contract the disease a second time; no case in itself proved fatal, but disorder of the heart-beat was a frequent result.

Inspection of the temperature charts disclosed the relapsing nature of the fever, and suggested the life cycle of some parasite. Diligent search was made but no parasite was discovered, although it was inevitable that suspicion should fall upon the louse as an intermediate host. Fevers of unknown origin are credited with 15,355 cases, and trench fever definitely with 4,987 cases, but almost none were fatal in themselves.

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## Tetanus

Tetanus in the army has gone the way of typhoid. Tetanus in civil life has always meant "lockjaw" with that frightful *risus sardonicus* produced by the stiffened muscles of the face, when treatment was of no avail, for the virus proceeds upwards not by the blood but by way of the nerves, and the fifth nerve is the chosen path. In the army tetanus was observed in a much earlier stage, and nursing sisters engaged in dressing wounds were warned to give the alarm if they discovered that the muscles around the wound were harder or more rigid than the muscles of the corresponding part on the opposite side. These symptoms may be the only ones present for hours or even days. They are followed in order by increased muscular tone, with exaggeration of the deep reflexes; a drawn expression of the face; mental excitement and sleeplessness. Much later come stiffness of the jaw and neck, spasm of the pharynx and tongue and of the abdominal muscles, facial spasm and paralysis or spasm of the ocular muscles with consequent strabismus. The effect of incomplete protection by antitoxin was observed to be a delayed tetanus, in which general symptoms might not occur until many weeks had elapsed. These symptoms might disappear or pass into the graver sequence.

As early as March, 1916, the War Office appointed a committee to study the subject of tetanus. In August the result of their research was published. Various revisions followed until the final form was reached.[7] Few subjects escaped enquiry by committees composed of the acutest and most learned professional minds, and a question arose whether the conclusions they reached should be regarded as an order or as a body of suggestions which might, or might not, be carried out according

to the judgement of the officers in charge of hospitals. The War Office made a ruling that it had never been the policy of army medical directors to interfere with the treatment of the sick soldier by his medical officer. With regard to prophylaxis, on the contrary, whether of small-pox, typhoid fever, or tetanus, these conclusions were an army order which must be carried out, whatever the personal predilections of the medical officers in charge of hospitals might be. This ruling prevented professional recalcitrancy and gave increased authority to scientific opinion.

In time a preventive treatment of tetanus was developed which practically eliminated the disease from the army. This treatment was based on two principles: early and repeated injection of antitoxin; complete and early excision of gun-shot wounds. Clinical and experimental evidence showed that the immunity conferred by an injection began to decline in ten days. As it was impossible from the appearance of any wound to determine the presence or absence of tetanus bacilli, it was decided early in 1917 that all wounded should receive one primary injection; and as many cases of tetanus occurred in men with healed wounds, it was further decided to repeat the injection at three intervals of seven days each. Local conditions, such as trench foot, even where breach of surface was not obvious, were to be treated as wounds.

Less than three per cent of gun-shot wounds were found sterile. No lacerated shell wound healed by first intention without surgical aid. Many such wounds excised within 12 hours healed and recovered as rapidly as a primary aseptic operation wound. Excised wounds which broke down after primary suture, and non-excised wounds, usually contained both aerobic and anaerobic bacteria. Even in the excised wounds which failed to heal by first intention, the numbers and varieties of anaerobic bacilli

were less than in non-excised wounds. In 100 wounds subjected to immediate excision 30 contained end-sporing bacteria, while in 100 non-excised wounds, 60 contained these anaerobes, 30 against 60 per cent. The tetanus bacillus was especially sought for in wounds of men showing no clinical signs of tetanus; in 30 excised wounds virulent tetanus bacilli were demonstrated but once (3·3 per cent); while in 70 non-excised wounds they were found 18 times (25·8 per cent). Cases of tetanus were reported with incubation periods of many months, proving the existence of latent tetanus infection.

This committee under the direction of Sir David Bruce searched the whole subject with profound care, and room must be found even on these crowded pages for an account with some abridgement of the results of their deeper discovery: Symbiosis between aerobic and anaerobic bacteria is apparently of great importance in the initial stages of tetanus, in gas-gangrene and other wound diseases: the growth of aerobic bacteria in damaged tissue promoting the development of anaerobic organisms. Sequestra removed from wound areas three or four years after wounding have been found to contain end-sporing anaerobic bacteria; the majority of these sequestra show unaltered bony structure and were evidently detached at the time of the original injury. They are commonest in wound tissue which has been the seat of prolonged sepsis. Histological examination of these sequestra points to their origin from compact bone. The Haversian canals are frequently blocked with a coagulum containing entangled bacteria. Cultivations from the sinus leading to these sequestra often give aerobic cocci only, although the sequestrum and the granulation tissue removed from its bed give abundant anaerobic growth. Metal fragments and bullets removed from completely healed wounds are by no means always sterile but in many

instances give anaerobic growths. The surgical prevention of tetanus, therefore, consists of the free removal of all damaged tissues before the organisms carried into the wound have developed to a dangerous degree. This will probably be within the first twelve hours of wounding. In excising the wound area care should be taken that no incision is carried from infected wound tissue into surrounding healthy tissue, and instruments used to manipulate wound surfaces superficial and deep, should not be used on the surrounding healthy tissue; clean cutting with a knife is better than scissors as less likely to leave bruised tissue behind. All metal fragments and other foreign bodies should be removed and careful search made for detached bone fragments, including those driven into the surrounding soft parts. The removal of large fragments must always be at the discretion of the surgeon, but it may be pointed out that the life of a fragment will partially depend upon the length of the period the fragment has been subjected to suppuration. Instances are on record of local tetanus which has persisted until a sequestrum was removed or exfoliated. In local tetanus the removal of sequestra or foreign bodies in the vicinity of the wound disclosed by radiograms should be performed as routine treatment, but only after a prophylactic injection of anti-tetanic serum. When removing the foreign body the fibrous capsule enclosing it should also be dissected away. In one case tetanus bacillus was found 332 days after the injury. In 1,000 operations at the site of healed wounds tetanus developed in 72 cases. On the other hand, in a series of 100 wounds the tetanus bacillus was discovered in 19 cases which showed no symptoms of the disease. There would appear to be four varieties of the bacillus, differing in virulence or possibly in their resistance to anti-toxin.

The dose was fixed at 500 units in 3 *c.c.* of horse serum given under the skin or into the muscles. In November, 1918, the initial amount was officially raised to 1,500 units, although it had been in use much earlier, the subsequent injections remaining the same. In England alone two million preventive injections were made. Only eleven cases of anaphylactic shock with one death are reported. Following the therapeutic use of serum in 1,400 cases there were 49 instances of shock with 12 deaths. It appeared that injection into the veins was the most dangerous; into the spinal canal less; into the muscles least of all, and more swift in action than when introduced under the skin. In cases of shock the symtoms may be prompt, or delayed for several hours. There is extreme weakness and prostration, and the patient is acutely alarmed. Respiration becomes shallow and irregular and the pulse is rapid and small in volume. There may be urticaria and in some cases oedema of the eyelids, palate, and other parts of the body. Recovery may be complete within an hour. In other cases the patients remain in a weak and collapsed state; respiratory movements remain shallow and the pulse may be rapid, of poor volume and sometimes irregular.

In the treatment of acute general tetanus the best results are obtained from very large doses of serum; the more acute the case the larger should be the amount employed. For this purpose from 50,000 to 100,000 units may be given during the first few days of treatment. When the disease shows distinct signs of abating the dose may be decreased, the interval between the doses lengthened and the serum given only subcutaneously.

It is only since the outbreak of the war that the importance of gas-gangrene as a dangerous and fatal complication of gunshot wounds, and as an active aider and abettor of the tetanus bacillus, has been justly estimated. The Committee devoted much study to the proposal that the

antitoxins of other anaerobes infecting wounds should be added to the tetanus antitoxin. By November 1, 1918, it was decided at the War Office to add the antitoxins of vibrion *septique, B. oedematiens.* and *B. welchii* for general use in France; but the Committee was gravely apprehensive of the result.

### Trench Foot

The condition known as "trench foot" caused great distress to the soldiers, and embarrassment to the medical service on account of its novelty and resistance to treatment. In the winter of 1914-15 the disease was common; in the following winter, the first spent by the Canadians in the line, it was of only occasional occurrence. What was once a disease had now become a "crime"; but it was the unit as a whole that was penalized by stoppage of leave, and not the man. Measures had been discovered for preventing the conditions, and they were rigidly enforced.

By the English "frost bite" was applied as the cause; but it was hard for Canadians to understand how feet could be frost-bitten in a temperature that showed only a few degrees of frost. Continued cold wetness was the principal element in the case, with added secondary infection from the soil. The appearance of the foot was startling. A mild case showed a brawny swelling; but as the condition advanced the foot became dusky; the toes dropped off by a process of gangrene, and even the whole foot might be destroyed in a very few days.

Trench foot was proved by Lorrain Smith and his colleagues, working experimentally upon the rabbit, to be a condition due to cold which stopped short of death of the tissues, differing from frost-bite only in degree, although it also may end in gangrene. The primary lesion is vascular, followed by a secondary reaction when the element of cold is removed.

Cure was difficult, but prevention sure. Boots must be well oiled and large, the puttees loose. Feet and legs were rubbed with whale oil or other animal fat, and dry socks put on. The period for a battalion in the trenches was reduced to 48 hours, and wet trenches were lightly held by about 48 men of the company, the remainder being dry in close reserve. After 12 hours in the outposts the men were relieved and marched back to a warm rest station, where they were stripped, rubbed down, and wrapped each in three blankets. They were given a hot meal and allowed to sleep or rest for 24 hours, when they rejoined their unit. If feet or hands did become "chilled," the circulation was to be restored by rubbing with oil, never by fire or hot water. This elaborate procedure was not necessary when the trenches could be kept reasonably dry, and was only employed in situations where the very nature of the soil prevented rapid movement or surprise by the enemy. This condition accounted for 246 casualties amongst officers, 4,741 in other ranks, with only two deaths.

### Trench Mouth

"Trench Mouth," a form of ulcerative stomatitis, was checked by dental care and by an order put in force at Witley Camp as early as 1915, that in public drinking-places every glass or mug after being used should have its edge dipped into boiling water in the presence of the customer. This order was afterwards extended to Belgium and France, where all estaminets unprovided with suitable apparatus were placed out of bounds. The sterilizer was homely but effective, and the proprietors always regarded it with a certain humourous toleration, as a concession to the strange habits of the English soldier. The Belgian beer itself was homely enough, and the water for the brew was occasionally

drawn from a ditch which received the drainage from a bath house. To the dispensers this order seemed like an attempt to make clean the outside of the dish. Infectious stomatitis, "trench mouth" was practically an unknown disease prior to the war, but the troops had not been long overseas before this trouble developed; at one time the epidemic reached the alarming proportions of ten thousand cases. The dental corps inaugurated a department of oral pathology, and as a result of correct diagnosis and patient perseverance in treatment, the disease was controlled.

### Other Infectious Diseases and Segregation Camps

Of the infectious diseases influenza was the most prevalent and the most fatal. There were 45,960 cases, of which 2,672 were amongst officers and 43,288 in the other ranks. Of these 776 ended in death. The experience of all armies was similar. In the American army influenza caused 31·82 per cent of all sickness amongst officers, and 28·6 per cent amongst enlisted men. Of the deaths from sickness it was the cause of 47·31 per cent in officers and 48·61 per cent in men. If pneumonia be included as an associated condition the death rate from these two diseases was 73·97 and 80·87 per cent respectively in officers and men. This excessive mortality was due to a secondary invasion by *streptococcus pyogenes longus,* its virulence being increased by the initial infection. A most elaborate investigation of epidemic influenza, based in part upon material in Bramshott Canadian Military Hospital in charge of Colonel H. M. Robertson and Lieut.-Colonel E. C. Cole, was made by Major R. Abrahams, Capt. Norman Hallows, and Lieut.-Colonel Herbert French.[8] No specific treatment was discovered by any serum, and the remedial measures common in civil life were hard to apply.

On board the transports epidemics of influenza were common and presented peculiar difficulties. In the *City of Cairo,* which sailed from Quebec September 28, 1918, and arrived at Devonport October 11, with 1,057 troops, nearly all were sick, and there were 32 deaths at sea. On arrival 244 cases were transferred to hospital, of which 114 were on stretchers. The *Hunstead,* which sailed from Montreal September 26, 1918, carried 1,549 troops. Of these 39 died at sea, and upon arrival 73 cases were sent into hospital. The heaviest casualties were in the western drafts, and none amongst the coloured troops. The *Victoria* sailed from Quebec, October 6, 1918, with 1,230 troops. There were 28 deaths, a morning sick state of 307. On arrival 130 were transferred to hospital. The experience on ships returning to Canada at this time was somewhat similar. The *Araguaya* leaving England June 26, 1918, had 175 cases amongst 763 on board. The crews of many ships were infected, and would have conveyed the epidemic to the troops even if they were free when they embarked. The *Nagoya* at Montreal July 9, 1918, had 100 cases in a personnel of 160, and the *Somali* had seven. Numerous courts of inquiry were held, but in every case the results expected from the medical officers were impossible.

Under the system developed in the later years of the war recruits arrived in England with practically no military training, and yet it was impossible to despatch them forthwith to their reserve units. Experience had shown that placing newly arrived troops in established camps frequently introduced infectious diseases among those ready for draft. This, with the resultant period of quarantine, had at times seriously affected the reinforcing power of the reserve units. The recruit, therefore, had first to spend a period of 28 days in a segregation camp. This method practically eliminated epidemics in the training camps,

whilst it did not interfere with the progress of the recruit, as his preliminary training was continued in segregation. This period was used to establish the man's health, and to instil into him the essentials of military discipline by physical training, close order drill, and athletics. When the time came for him to join his reserve unit, he could at once take his place in the ranks and proceed with the more technical details of his training.

The first segregation camp was opened at Otterpool in September, 1916; the plan was enlarged at Frensham Pond between Witley and Bramshott in the spring of 1918. The great influx of troops from Canada in that year demanded the opening of a second camp at Bourley Wood. These camps being tented were not suitable for winter occupation, and in the autumn they were closed after a large hutted camp had been secured at Rhyl. This was also a more suitable spot, being close to Liverpool, where the great majority of Canadian troops were disembarked. The same reason marked the camp for use in the future when the cessation of hostilities would demand concentration camps near the principal port of embarkation for home. These camps were also used for the segregation and control of infectious cases and contacts arising in any part of the forces whilst in England, to prevent them from carrying disease into France.

Of the other infectious diseases mumps stood first with 9,644 cases; it was only second to influenza in the American army. Pneumonia is credited with 4,712 cases, and 1,261 deaths, a mortality of 26·7 per cent. Tuberculosis of the lungs was responsible for 3,123 cases and 176 deaths 5·8 per cent; measles for 2,186 cases and 30 deaths; scarlet fever for 271 cases and 4 deaths; rheumatic fever for 1,258 cases and 2 deaths; German measles for 2,641 cases; diphtheria for 1,701 cases with 18 deaths; malaria for 460 cases

with 6 deaths; chicken-pox, 109 cases. There were only 10 cases of smallpox with one death, and one case of cholera. Of other conditions there were 10,473 cases of tonsilitis, 1,683 insane, and 8,513 is given as the index of nervous diseases. Disorderly action of the heart applied to 4,675 cases; scabies to 9,559; and diseases of the skin to 9,471 cases. In the German army the incidence of tuberculosis was 1·67 per cent of the total strength; influenza 14·1 per cent.

### Lice

Few persons in the army—officers or men—escaped the attention of the humble and friendly louse. Officers could free themselves, and keep free, as they could provide a certain space between themselves and those who slept adjacent. For the men there was no such protection, and even the most fastidious in the end accepted the inevitable. The habits of the louse by much study came to be understood. He is personal to man and quickly perishes when he is deprived of his host. He does not infest empty billets, or live long on straw or other inanimate habitat. But he is always dissatisfied with his host, and when men lie close he wanders in search of a more congenial partner, so that a whole battalion becomes infected from only a few men. Lice caused more irritation than any other of the inconveniences of war. Some men, before they became inured, passed through all stages of mental disturbance from dislike and disgust to hatred and frenzy. A war without lice appeared to them a luxurious way of living. In the end this freedom was achieved.

No means were left untried by the medical service to keep the men free from lice. Powders were useless; passing a hot iron along the seams of clothing was little better; washing the garments did not help; the Thresh sterilizer

was impracticable—it left the clothes wet and ruined some parts of them. The method that finally succeeded was a reversion on a large scale to the old practice of employing dry heat as in an oven. And the amount of heat required to destroy lice and eggs is not great, not more than 20°C. above the body temperature. Major H. Orr in command of a sanitary section was the first to apply this practice to the needs of the army, and huts designated by his name quickly arose along the whole front. The appliance in its simplest form was a room heated with braziers or stoves. The clothing was hung on rails, and after ten minutes exposure to a temperature of 60°C. all lice and nits were destroyed.

### Scabies

Scabies also yielded to concerted treatment on a large scale. The profession had become unfamiliar with the condition, and medical officers failed to recognize its early appearance. Many men were allowed to fall into a deplorable state; the irritated skin became infected with organisms of all kinds, and the combined condition defied diagnosis or treatment. A school of instruction for a whole army was opened at Hazebrouck, under Major Philip Burnett. Medical officers became more alert. Central baths were established where men could follow a routine of treatment by which the disease was brought under control. Freed from lice and freed from itch, the men in the later years of the war had that much less to complain of.

Cases of ordinary skin conditions, such as lichen planus, psoriasis, sycosis, ringworm, eczema marginatum as it was then called, were common; but they were observed by accident, since men would only seek relief from the diseases which caused them great discomfort.

## Shell Shock

Shell-shock was a term used in the early days to describe a variety of conditions ranging from cowardice to maniacal insanity. After endless discussion the physicians and metaphysicians, the psychologists, physiologists, and neurologists invented a series of names which did not leave the matter much clearer than it was when they found it. "The war produced no new nervous disease; it was the same hysteria and neurasthenia neurologists knew before the war,"[9] but it produced many new names and theories. The condition was well known to the Duke of Wellington, and he had a routine method of treatment.

The War Office went so far as to recognize three forms of neurosis or psychoneurosis, namely, shell-shock, hysteria, and neurasthenia. Sir Frederick Mott observed, however, that all persons so affected "had an inborn or acquired disposition to emotivity." A similar observation was frequently made by experienced corporals, but they did not record their "findings" in quite those terms. Soldiers who developed these manifestations in the stress of war would have presented a similar spectacle in corresponding circumstances in civil life. The Americans were so informed. They refused to enlist men who were mentally unstable. From one division alone in progress of formation they eliminated 400 men, and sent 500 more to non-combatant units, with the result that of those who did develop a neurosis only one per cent required to be evacuated.

The medical officer at the front had no knowledge of the jargon in which the problem was being discussed. He could not distinguish hypo-emotive from hyper-emotive, or commotio cerebri from emotio cerebri; he could not tell who was right about certain symptoms,—Babinski, Claude, or Roussy, with their respective reflexes, dynamogenic, and dysocinetic explanations. "Rheumatism" he knew, a

slacker he was pretty sure of after consultation with the sergeant-major. All violent cases he classified in his own mind as "crazy," and sent them to a "special centre," as "not yet diagnosed."

They alone jest at scars, who never felt a wound. The best of soldiers after several years service had moments of misgiving, lest in some supreme trial they might behave themselves unseemly—"anxiety neurosis," it was called. At such times were born those most intimate confidences of the war; and there are many who will always remember a firm and friendly word of assurance, and possibly a draught of rum, from an experienced medical officer whose own hour of "fear-emotion" had passed.

Under cover of these vague and mysterious symptoms the malingerer found refuge, and impressed a stigma upon those who were suffering from a real malady. The medical officer was bewildered in his attempt to hold the balance between injustice to the individual and disregard for the needs of the service. Especially was he haunted with a dreadful fear when he was called upon to certify that a man was "fit" to undergo punishment for a "crime," and most especially when it was his duty to be present alone with minister or priest to certify that the award of a court-martial for cowardice in the face of the enemy, confirmed by the Commander, had been finally bestowed. This attendance at executions was the most painful duty of the medical officers' many unpleasant duties.

The general statement is probably correct, that in the early days of the war too lenient a treatment was accorded to soldiers suffering, thinking they suffered, or pretending to suffer, from concussion or fright neurosis, from hysteria, neurasthenia, psychasthenia, reflex paralysis, katatonic stupor, or combination and subdivision thereof; and that up to the end it was not sufficiently realized that men who

were liable to such condition were not fit for the hard business of war. In the summer of 1915, and even of 1916, it was a common spectacle—a soldier with no apparent wound or scar, sitting in the shade of an English tree with his pipe and paper, contemplating his misery and reflecting aloud upon his prowess.

What was once a disease had in 1917 become a stigma, and yet, as one nail drives out one nail and one fire one fire, so fear of the ostracism of contempt for weakness at best and cowardice at worst did much to counteract the emotion of fear of the enemy. "In no circumstances whatever," the order ran, "will the expression "shell-shock" be made use of verbally or be recorded in any regimental or other casualty report, or in any hospital or other medical document except in cases so classified by the order of the officer commanding the special hospital for such cases."[10]

The treatment of these cases by suggestion, hypnotism, and "analysis" was sometimes brilliant, but the results were often short-lived, and the patients soon sought centres for a fresh cure. Dr. L. R. Yealland whose advice was often sought by the Canadian service treated many cases with amazing success at Queen Square Hospital.[11] Hysteria is the most epidemical of all diseases, and too obvious special facilities for treatment encouraged its development. "Shell-shock" is a manifestation of childishness and femininity. Against such there is no remedy.

### Self-inflicted Wounds

Closely allied with this mental state is the desire for self-inflicted wounds. At the battle of Ypres in 1915, the practice was observed amongst the coloured troops. Dr. Allen Greenwood of Boston, serving at No. 7 American Evacuation Hospital, in one night observed 25 men who had either shot off the middle or forefinger of the left hand, or

discharged a bullet between the big toe and the first toe, or between the first and second toe, and a few who had shot themselves through the thumb of the left hand.[1][2]

In the Canadian army there is a record of 729 cases of self-inflicted wounds of which 6 were amongst officers. The sufferer was always put under arrest by the first medical officer to whom he applied, and he was sent to a special hospital which had a permanent court-martial in attendance. Each case was considered on its merits, and those were released in which the injury was obviously inflicted by accident and not by design. This rule of arrest was so rigid that a man who, for example, tore his hand upon a wire entanglement would nurse his wound in secret.

In some cases the utmost of ingenuity was exercised to inflict these wounds. A man would fasten his rifle in a fixed position, discharge it, and observe where the bullet struck. He would then place the least serviceable part of his body in the line of fire and discharge the rifle again. Some of these victims were aggrieved that their "courage" in causing the wound was not more highly appraised. Men on leave discovered a further form of ingenuity, and deliberately consorted with promising women. This practice was hard to check, as venereal disease is the least difficult of all self-inflicted wounds to inflict.

[1] *Report of the Special Advisory Committee upon Bacteriological Studies of Cerebro-Spinal Fever during the Epidemic of 1915.* London, 1916, p. 50.

[2] Much, Hans. Zensur und Wissenschaft. München, med. Wchnschr, 1919, 66, 52. Medical Supplement to Review of Foreign Press, War Office, April, 1919, p. 182.

[3] *Brit. Med. Jour.* F. W. Andrewes, M.D. Special No. 1917, p. 7.

[4] *Quarterly Jour. of Med.* October, 1916.

[5] *Jour. of Exper. Med.* March 1, 1916, p. 377.

[6] *Lancet,* Nov. 20, 1915.

[7] 24 Gen. No. 1. 4799 (A.M.D.2).

[8] *The Lancet,* January 4, 1919, p. 2.

[9] Sir F. W. Mott. *proc. B.M.A.* 1919, p. 63.

[10] Report O.M.F.C. 1918, p. 313.

[11] *Hysterical Disorders of Warfare.* L. R. Yealland, M.D. Macmillan and Co., 1918.

[12] *Trans.* Am. Ophth. Soc., p. 150, 1919.

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## CHAPTER XXII

### SPECIAL ORGANS

#### The Eye—The Ear—Venereal Disease

Wounds of the eye in war appear to be uncommon merely because they are so often fatal, being in association with more extensive lesions. Felix Lagrange[1] supplies an historical sketch of these massive injuries, in which the eye is involved, and recalls a parallel experience from a Greek document of twenty-seven centuries ago: "Penelius struck Ilioneus beneath the eyebrow towards the back of the eye, of which the pupil was torn away; and the spear, piercing the eye, came out at the back of the head; and Ilioneus, his hands stretched forth, fell."

Wounds of the eye when not fatal are always impressive by reason of the peculiar disability they create. As a result of such wounds 4 officers and 62 other ranks are completely blind. All were sent to St. Dunstan's Hostel where they were trained for their new condition, and those who desired were taught trades whereby they were qualified to earn a livelihood.

Loss of one eye was suffered by 19 officers and 457 other ranks, making a total of 476; but 10 others lost an eye as part of a more general injury, and one man blinded himself wilfully. Of diseases of the eye there were in officers 281 cases, and in men 6,266, making a total of 6,547; but no deaths are attributed to this cause. By August, 1917, there were 2,400 totally blind in the French

army and 700 in the British. The cases in the British service, including the Canadian, were assembled at an ophthalmic centre in Boulogne, No. 83 General Hospital, which had 150 beds available.

Unless in plastic operations the war added nothing to experience in the surgery of the eye. "Unless in plastic operations" is, however, a wide reservation and important advance was made in that field. The difficulty of enlarging the conjunctival sac, or rather in securing the enlargement made, was solved. Captain Esser enlarged the sac by a buried skin graft over the dental compound. Major Waldron improved the technique by making the primary incision in the conjunctival surface instead of through the skin of the eyelid. Major Gillies further improved the technique. In the method of Esser, called by him epithelial outlay, the dental mould covered with skin-graft was buried in the subcutaneous tissue through an incision in the skin, and was removed through the same incision. The method of Gillies was termed epithelial overlay, and was of great service where there had been extensive loss of tissue.

The effect of irritant poison gas was already familiar. In such cases with a subacute conjunctivitis, protection of the eyes from light was given by a shade or dark glasses. As treatment warm alkaline irrigation of the conjunctiva followed by the instillation of a drop of liquid paraffin four times a day was found to be sufficient. At the base hospitals in France the use of atropine ointment, instead of liquid paraffin, was adopted when the cornea was hazy or otherwise injured. The most troublesome after effects of the conjunctivitis were photophobia and blepharospasm. When the conjunctivitis had disappeared eye shades and dark glasses were prohibited, and the patient was reassured that no damage to the eyes had

resulted. A certain number of patients aggravated the condition wilfully by rubbing the eyes. These received firm treatment. As soon as swelling of the conjunctiva had subsided and any corneal affection was cured, mild astringents were suitable.

A soldier wearing spectacles was a new thing in war, but with the extension of recruiting to all classes of the community the practice was not uncommon. In February, 1917, the vision of a man in Category A, which formerly had to be one-fourth normal vision in both eyes without glasses, was required to reach that standard in one eye only, provided the vision in the other eye could be corrected to one-half normal vision with the aid of glasses. As early as March, 1915, however, every man proceeding overseas whose eyesight would be improved by glasses was provided with two pairs.[2]

More specifically, a man was considered fit for any military service with 20/80 in one eye corrected to 20/40, even if the other eye had only sufficient vision to enable him to walk about. Men with less vision were referred to a specialist. By the same standard men were counted fit for base service overseas with 20/40 in the right eye and no vision whatever in the left, if there was no organic disease.

The American standard provided that a recruit might be accepted for general military service who had a minimum vision of 20/100 in one eye, and 20/40 in the other eye without glasses, or 20/100 in each eye without glasses, if corrected with glasses to 20/40 in either eye. A recruit was accepted for special service with 20/20 in one eye and 20/40 in the other without glasses, or 20/100 in each eye without glasses if corrected to 20/40 in either eye. Blindness in one eye with normal vision in the other was not a bar to service. The system of pasting a label

with the man's exact correction in his pay-book insured that his record went with him, and the nearest optical centre could quickly send him a new pair of glasses. For the medical corps, however, the American standard exacted that officers be corrected to 20/20 in each eye. This drastic rule debarred many physicians from service.[3]

Two sets of cases were extremely difficult to deal with: the one where a man was excessively anxious to enter the service, and the other where he desired to leave it. Men with impaired vision or even with one glass eye succeeded in passing the test by learning the letters on the chart as if they were a formula in algebra. A man who claimed that he suffered from night blindness was difficult to contradict. It is easy to design on paper tests with the prism, or the red and green letters of Snellen, or with changeable charts; but to employ them in the field demanded more skill than the medical officer was liable to possess. No test has yet been devised which will show the visual acuity of a man who is insincere. Glasses were supplied from one centre. With their addiction to spectacles, the Germans had an elaborate and cumbersome outfit for field use, which included a trial frame like a lorgnette for holding lenses, hundreds of cut and edged lenses ground with toric curve, and nose pieces of various sizes.

## The Ear

Disease of the ear was one of the most perplexing with which a medical officer had to deal. Purulent discharge from the meatus does not in itself disqualify a man from duty at the front; it may be a symptom of grave disorder and a signal of danger to life. To estimate its significance demands special experience. Cases with slight discharge and a large perforation of the

membrane were accounted fit, although the danger of extension to the brain was undoubted.

In the early days the loss of time from ear disease was very great. Numbers of soldiers were passing from hospital to convalescent camps and back to hospital again with only short intervals of duty. Many received no sustained treatment, and they performed little work that was useful. In the middle period practice inclined to the other extreme on the ground that the danger from a suppurating ear was almost negligible in view of the more certain dangers to which all soldiers are exposed. In the end special centres were established to which all cases were sent for a decision between the rights of the patient and the need of the service.

To the medical officer in the front line patients presented themselves with complaint of deafness. He had rarely the skill to make reflex tests; and in tests where sincerity on the part of the patient is a factor the medical officer was on uncertain ground. It was uncommon for a soldier to simulate deafness where no lesion existed; it commonly occurred that a soldier would magnify the extent of the deafness from which he actually suffered. As between malingering and exaggeration, between a degree of deafness which would not unfit a man for duty and one which made him a danger to himself and a menace to his comrades, the medical officer could best decide by reference to the character and record of the soldier.

With regard to the fitness of patients with chronic middle ear suppuration hard and fast rules cannot be laid down. In circumstances where medical attention and hospital treatment are always available many men can be taken for service with old-standing middle ear suppuration without much risk. But numbers of men with chronic middle ear suppuration were sent on front line

service who should have been either kept at home or on the lines of communication. Active service aggravated the condition and serious complications were liable to supervene. If these complications were immediately recognized the matter would not be of great importance; but it was the experience that lateral sinus thrombosis, extradural abscess, labyrinthitis, and brain abscess, were not generally recognized until too late. Those soldiers who were unfortunate enough to have chronic middle ear suppuration with caries were subjected to risks which might have been avoided.[4]

In the French army the minimum hearing requirement for armed service was—whisper at 50*cm.* or ordinary voice at 4 to 5 *m.* For the auxiliary services a quarter of the above hearing distances was required. Anything less than that entitled to exemption or discharge. Cases with caries or polypus formation or cases with cholesteatoma or attic suppuration were exempted if they were not improved by treatment.

In the German army the minimum requirements for active service were a unilateral defect of not less than whisper at one metre. For the auxiliary services a hearing distance was required of whisper at one metre if bilateral; or if unilateral, hearing at less than one metre was accepted when the other ear was normal. In the Italian army similarly the standard of hearing was whisper at one metre.

It may be taken as a safe general rule, laid down by Captain Dickie, that in the case of unilateral deafness the hearing should not be less than whisper at three feet, and ordinary voice at about ten feet in the deaf ear for front line work. If the deafness is bilateral, whisper should be heard at six feet and voice at fifteen feet. For the auxiliary services total deafness on one side may be

allowed if the other ear is normal. In bilateral deafness ordinary voice should be heard at six feet.

Radical operation for disease of the mastoid bone was unsatisfactory, and should not be performed unless the symptoms are urgent. Wertheim of Breslau collected 100 cases operated on during the war by various surgeons. He found that in 48 of them the ear was still discharging and there was no question of cure. In 51 the ear was practically deaf. In 80 per cent whisper was heard at not more than one metre. In a series reported by J. S. Fraser and J. K. M. Dickie 85 per cent were dry; in 68 per cent hearing was improved, 18 per cent remained the same, and in 13 per cent the hearing was diminished. Even if a perfect cure resulted from the operation, the duration of convalescence was so long that from the military point of view the time spent did not compensate for the possible slight increase in efficiency of the soldier.

In the French army, where there were large otological services, a considerable number of operations were done on selected cases with the idea of rendering men permanently fit and returning them to the line. A cure was obtained in fifty to seventy days. Conditions in the French army were more favourable, as the patients could be kept under observation by the surgeon until the treatment was complete.

A healed mastoid is no bar to military service provided that the hearing is normal in the other ear. A soldier with normal ear drums who claims that he was made totally deaf by gun fire is either a malingerer or hysterical. If the man has already had a chronic suppuration in the middle ear, the degree may be increased by concussion, and a cicatrix of the membrane may be ruptured, but absolute deafness in such cases is functional. Very rarely was a case observed in which a healthy

membrane was ruptured, apart from obvious gunshot wound of the head; and no shock which left the vestibule unaffected could possibly cause total destruction of the cochlea and end organs.

There is no analogy between the deafness of warfare and occupational deafness, although it is conceivable that, if war had degenerated into an occupation, the cases might have fallen into the second category. Still on the authority of Captain Dickie, and adapting his words to the present purpose: It was shown many years ago experimentally by Wittmaack, Siebenmann, and Yoshii that prolonged exposure to loud noises of a constant pitch caused degeneration of the end-organs in certain parts of the cochlea corresponding to the pitch of the sound. Low-pitched tones affected the apical coil; high-pitched tones the basal coil; and medium-pitched tones the middle coil. Rodger proved that boiler-maker's deafness in the earlier stages showed a defect only in that part of the tone scale which corresponded with the prevailing loud noises. Later the deafness spread up and down the scale. Wittmaack in a subsequent paper found experimentally that the lesions caused by air-conducted sounds remained stationary and did not spread, but that the progressive deafness was due to vibrations conducted from the floor through the bones. This produced a degeneration in a part of the cochlea different from that affected by the air-conducted sounds as in gun-fire. Diseases of the ear are held responsible for 271 admissions of officers, 5,689 other ranks, and 19 deaths.

### Venereal Disease

In any military force the waste of personnel caused by venereal disease has always been the most obvious and

the most difficult to avoid. No preventive means—from ethics and morality to permanganate of potash and mercury ointment—have gone untried. The earliest success was obtained by the Russian navy in eastern waters more than forty years ago. Establishments under official control were erected at various stations where an adequate number of females were housed; and only those ratings were allowed shore leave to visit them, whose medical and crime sheets were clean. In one ship of the United States navy on the same station a zealous medical officer inaugurated a different system. Only those men free from venereal disease were allowed ashore, and as they returned on board all, without exception, were treated with injection and inunction at the gangway. In neither navy was any man compelled to leave the ship, and there was therefore no compulsion to undergo treatment.

In the Canadian Corps in France the troops came little into contact with the civilian population, and any man infected was obliged to disclose the source. The woman was then taken to a French "mixed hospital," and if she was found to be infected, she was deported from the area and put under restraint. In some cases a man would be taken sixty miles to identify his seducer. As a result the Canadian Corps was practically free from venereal disease contracted in the field. In one division from which returns were available for a period of many weeks with no leave there was not more than one new case a day amongst thirty thousand troops.

In the American army, of 152,716 white troops arriving in France in June and July, 1918, only three per thousand showed the disease; but amongst the negro troops 24 per thousand were infected. In France the incidence upon the whole American force after September, 1918, averaged 40 per thousand. This rate was based upon inspection of all men, and of officers after March 15,

1919; the British rate of 25 per thousand was determined by hospital admissions, and officers were always excluded.

In the rear areas and on the lines protection was not so simple. In the larger towns certain places were discovered, which were at least tolerated by the French authorities, and in the minds of the soldiers of the various forces toleration came to mean security. Early in the war all cases of venereal disease were evacuated. As a result instances occurred in which men deliberately infected themselves with the milder forms from a favoured comrade. At the end of the year 1915 the practice of evacuation was stopped and men with ordinary symptoms were returned to duty as in civil life. They became unpopular with their comrades, and this ostracism was a salutary check upon temptation.

But the army could not protect itself against the female population of England and of the large cities of France, whilst the men were on leave. A means of protection was devised, and each man going on leave was handed a packet with his travelling warrant. The choicer spirits cast them down with indignity, as being useless, unnecessary, or superfluous. Then the packets were supplied only on request. To these men brought up in the poverty, chastity, and obedience of the army, a large civilian city presented itself as a huge place of temptation, and many fell away from their good resolution.

Nothing can be more futile than the attempt to assign exact historical causes for increased, or diminished, incidence of venereal disease. In the problem, the nature of men, and of women too, is concerned individually and in the mass. Environment, opportunity, and public opinion all operate powerfully. Certain facts emerge to prove that this incidence diminishes with the increase of civilisation; for as men and women rise above the status

of the beast they leave their bestial habits below them. In the Aldershot Command the admissions for venereal disease per thousand per annum diminished regularly from 321 in 1885 to 30 in 1913; in the London District in the same period the rate descended from 340 to 96; and in the whole kingdom from 275 to 60. The inference is obvious. For the modern soldier there are other means of entertainment.

In the American army, prophylactic tubes were not given out except for special reasons in exceptional cases. It was considered that they weakened the morale and were much less efficient than treatment after exposure. For this purpose elaborate arrangements were made in camps and leave areas as a military measure, and any man developing disease, who had not availed himself of treatment within four hours after contact, was tried by court-martial. The treatment was given by a trained attendant, and consisted of washing with soap and water and then with bichloride of mercury solution 1 to 1,000; injection of 2 per cent protargol or 1 per cent argyrol to be retained for three to five minutes; and 33 per cent calomel ointment rubbed in. Colonel P. M. Ashburn, who supplies these details,[5] believed that "practically no man using this treatment within one hour of intercourse acquired venereal disease, and only two per cent of those using it within three hours did so. After that the rate rose rapidly, and after twelve hours the protection amounted to little or nothing in its effect upon gonorrhœa or upon syphilis." Colonel Walker in confirmation gives the record of 2,425 men disinfected within 75 minutes of exposure, with only two cases of venereal disease.

The Americans with their naif disregard of personal and public prejudice made the system compulsory. The Australians went nearly as far; but in the English and

Canadian armies the treatment was voluntary. In the Australian service early treatment centres were established where eight days of treatment were given in the line without sending the men to hospital or stopping their pay, followed by nine days of observation when relapse meant evacuation.

In the English army in 1916 ablution chambers were set up in barracks, where men could disinfect with potassium permanganate and calomel ointment. According to Colonel L. W. Harrison, the method was not a success, and in 1918 a new system was adopted, under which any man might receive on request a small bottle of potassium permanganate and a tube of 30 per cent calomel ointment which he might use if he so desired. Colonel Harrison did not think the results "particularly striking" and the change in procedure did not appear to him to have made any great difference in the rate of admission. Indeed from one table he supplies it seems the results were better according as the treatment was delayed.

It would appear an easy matter to determine the value of these self-protective measures; but the attempt has been hopeless. There are quite divergent reports that the disease had been eradicated from units by those means. The 1st Australian General Hospital will serve as one example.[6] On the other hand the general experience is recorded in the British official history of the medical services in the war, that "the success is a matter of controversy." The incidence was greater amongst the Dominion troops, which to the editor "is remarkable from the fact that preventive measures were enforced amongst the Dominion troops and not amongst the British." The experience in the American army was exactly similar.

The army was a school of sexual virtue. The Germans with their passion for statistics investigated the

effects of prolonged continence, and found nothing evil in it. Lissmann,[7] basing his observations on three years' experience as medical officer to a Landwehr battalion, decided that "abstinence was tolerated by almost all the men without important, or, as far as could be determined, permanent ill effects." The men varied in age from 30 to 45 years; the majority were married; their chastity was absolute, for the battalion remained for a whole year in a place from which the civil population had been completely evacuated. As life in the trenches became prolonged and the food deteriorated in quality and quantity all desire disappeared. There was a decline, but only for the time, in sexual potency. No case of true or false homo-sexuality was discovered.

The testimony in all documents is that venereal disease was much more common amongst troops from overseas than amongst those from England. This bad eminence does not in itself testify to a higher degree of chastity in the English soldiers, as it is probable that living in accustomed surroundings they had their own arrangements. This high incidence prevailed alike amongst Americans and all Dominion troops in whatever part of the world they might be. In Bermuda there were 359 admissions, "almost entirely amongst the men of the Canadian battalions."[8] In the Southern Command in England where the greater number of the Australian and New Zealand troops were stationed the annual admission rate was 128 per 1,000 of strength from the Australians, and 130 from the men of New Zealand as compared with 24 per 1,000 amongst other British troops.[9] From Cairo, where the Australians were stationed, between February and September, 1915, cases of venereal disease to the number of 1,344 were returned home, and 450 were evacuated to Malta. This was 10 per cent of the force of 18,000 men.[10]

In the Canadian army overseas during the period of the war there were 66,083 cases of venereal disease, of which 18,612 were syphilis; this yields a rate of 158 per thousand, and for syphilis alone 4·5 per cent or 45 per thousand.

To the American army 5·6 per cent of the men came from civil life with venereal disease, and 7·4 per cent were detected with the disease before leaving the country; the incidence in Europe and in the United States was the same. The negro troops had a rate seven times as high as the whites, and 70 per cent of them either brought the disease in with them or contracted it after they joined. In Canada during the year 1918, of 42,312 admissions to hospital, 13 per cent were for venereal disease; in May and June 1,349 cases were admitted of which 60 per cent were contracted in civil life.

In the German army the ratio of venereal disease ranged from 15·2 per 1,000 of total strength in the first year of war to 20·2 in the last year. A possible explanation of this comparatively low incidence upon European troops may be that many of the men had contracted in civil life that form of venereal disease which afterwards confers immunity, and also that other form which when it recurs may be almost negligible.

A special department was organized in the Canadian service to cope with venereal disease. The activities of that department are described in a report for the year 1917.[11] Education was considered the most important preventive measure. Pamphlets were issued; lectures were given by regimental officers, by an officer in each convalescent hospital, and by a staff officer detailed for the purpose. Instruction was given to all troops landing from Canada, to troops in training, and to those arriving on leave. Early treatment centres were established in every medical officer's hut, at the entrance to camps, and

in a convenient place in London. A special hospital of 1,000 beds was created at Etchinghill, also an annex at Bramshott which was afterwards absorbed into Witley with 650 beds. Even the needs of officers were not neglected; 85 beds were provided at Hastings. It should be added that, according to this report, the incidence of venereal disease, having regard to the number of cases, the number of troops, and the "total time" was 2·46 per cent. This discrepancy in incidence is possibly explained by the absence of the disease amongst troops in the line.

Venereal disease is never contracted within an army; it is always contracted from civilians outside the army. This disease is many times as prevalent amongst the civilian male population as it is amongst the troops; females also are liable to the disease, and if these be included, the disparity will appear greater. There was much apprehension amongst these same civilians in Canada lest they might become infected by the demobilized troops. The medical service did what it could. To allay the alarm an effort was made to forbid the discharge of infected soldiers, but it was not feasible to keep such cases on pay and allowances for an indefinite period. The men were dispersed and "warned"; and their names were sent in confidence to the provincial officers of health.

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[1] Military Medical Manuals, University of London Press, 1918.
[2] *British Official History of the War. Med. Serv. Gen. Hist.* Vol. I, p. 136.
[3] *Trans-Amer. Ophth. Soc. 1919,* p. 45 *et seq.* W. H. Wilder.
[4] *C.M.A. Jour.,* Dec. 1921, p. 863 et seq. J. K. Milne Dickie.
[5] B.M.A. *proc.* 1919.
[6] *Australian Army Medical Corps in Egypt,* Barrett and Deane, 1918, p. 125.
[7] *Ueuro-Sexologische Beobachtungen in der Front,* München, med. Wchnschr. 1918. 65. 295-7. Medical supplement G.S., W.O., July 1, 1918.
[8] *British Official History of the War. Med. Serv. Gen. Hist.* Vol. I, p. 255.
[9] Ibid, p. 202.
[10] *Australian Army Medical Corps in Egypt.* Barrett and Deane, 1918, p. 122.
[11] A.M.D. 7. 25-11-1, Dec., 1917.

# CHAPTER XXIII

## VARIOUS DETAILS

### In Foreign Parts—Poison Gas—Rations—Pensions—Medical Museum and Descriptive Catalogue

Apart from the western front, the eastern Mediterranean and Siberia were the only areas in which Canadian medical units operated. No. 1, 3 and 5 Stationary Hospitals sailed from Southampton August 1, 1915, on the *Asturias,* and by August 8 they arrived off Malta, where orders were received to proceed to Alexandria. No. 1 was transferred to the *Delta,* and sailed on August 14 for Lemnos, where it disembarked at West Mudros in lighters. War Office orders governing the whole movement were scant, delayed, or contradictory.

By August 23 the tented hospital was in operation. Within a week five hundred patients were under treatment for amoebic dysentry. This unit left Lemnos by the hospital ship *Dover Castle* on January 31, 1916, arriving at Alexandria February 2. It proceeded to Salonika on February 27, arriving March 3 and took over No. 1 New Zealand Stationary Hospital at Lembet Camp. On August 16, it was handed over to an English formation, and the first draft of the personnel sailed for England next day. The remainder followed on September 4. Upon arrival in England, this unit took over the Canadian Military Hospital at Hastings, where its name was changed to No. 13 Canadian General Hospital. It continued at Hastings with a bed capacity of 520 and returned to Canada as a unit, June 6, 1919.



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The officers and other ranks of No. 3 Stationary Hospital sailed from Alexandria on August 14, 1915, on board the *Afric* and arrived at Mudros on August 16. The nursing sisters proceeded at the same time on board the *Delta*. The hospital operated at Mudros with a bed capacity of 720, until February 6, 1916, when the personnel embarked on the *Delta*, and arrived at Alexandria on the 8th. On March 24, the unit sailed for England, arriving at Southampton on April 7. At this port the personnel was transferred at once to the *Anglo-Canadian*, which proceeded to le Havre, arriving there next day, and at Boulogne two days later, where it opened a tent hospital of 400 beds, expanding to 1,000 beds. This hospital was closed on November 2, and on the 10th proceeded to Doullens, arriving there next day.

The site assigned at Mudros to these hospitals had been occupied by a camp of Egyptian labourers; there was no sanitary provision; the water supply was precarious and depended on one borrowed cart; not even latrine pails were at hand; ordnance stores were on a ship in the roadstead only accessible in fine weather; food was scarce and unsuitable for the personnel, impossible for patients; dust and flies completed the distress.

These hospitals in the Levant encountered the full rigour of war in marked contrast with those on the western front where the conditions of supply were quite comparable with the facilities enjoyed in civil life. Indeed the misery of the personnel and the suffering of patients recall the events of Crimean days. They were six weeks' distant from the base, and communication was over dangerous seas; but the hardship was consequent upon the conception of the ill-fated Gallipoli campaign. The nursing sisters were in an impossible situation, themselves sick and a crowded hospital demanding their services.

Of all the personnel ninety-five out of a hundred developed acute enteritis mainly of the amoebic variety. The officer commanding No. 1 and several of the staff were invalided to England.

By September 1 the disease was prevalent; there were 600 cases in the wards. There was yet but one water-cart, and the well was failing. On September 8, there is a record in the diary: "Sickness among officers, nursing sisters, and men becoming prevalent. The fly menace is very great, also the dust; the poor food supply is very trying." With autumn came heavy rain and the flood poured through the tents. Early in October there was an increase of cases from Gallipoli of a most resistant type, 80 per cent being of the amoebic variety. In November, with the absence of vegetables and continued employment of preserved foods, scurvy began to show itself among the troops, and with this there appeared occasional cases of the closely allied condition, beriberi. At the end of the month there was a period of intense cold, with snow and rain. As a result, in one week four hundred cases of frost-bite were admitted from the peninsula, twelve cases so severe as to demand amputation of the foot. Orders were received to expand to one thousand beds, pending the evacuation of Suvla Bay and of the peninsula four weeks later. In addition to a large out-patient clinic, 6,300 cases were treated in the wards between August 23 and January 31, 1916, when No. 1 left Lemnos.[1]

No. 5 Stationary Hospital arrived at Alexandria on August 11, 1915, and was ordered to proceed to Cairo on the 13th. The Cavalry Barracks at Abbassia were taken over and converted into a hospital, which was opened on August 26, with a capacity of 400 beds. In two months this number was raised to 680. In January, 1916, the

unit was changed to a general hospital. On April 10, the unit proceeded to England by Alexandria, arriving at Southampton on April 21, but proceeded directly to France, landing at le Havre on April 22, and reached its destination, le Touquet, April 24.

No. 4 General Hospital with Colonel J. A. Roberts in command embarked at Devonport October 18, 1915, for Salonika, arriving at its destination November 9. A hospital with a capacity of 1,040 beds was erected on the Monastir Road, four miles outside of the city. In May, 1916, the hospital was transferred to the east side of the city to Kalamaria site. In this position huts were provided, with a bed capacity of 1,040, which was increased to 1,540 in July, 1916, and to 2,000 in June, 1917. The unit operated until August 17, 1917, when it handed over to an English hospital, and proceeded in two sections to England. It reassembled at Basingstoke, on October 24, and took over the new hospital there, which became known as No. 4 Canadian General Hospital. The original bed capacity of this hospital was 1,040, which was raised to 1,540 in September, 1918, and to 1,840 in October. The hospital closed June, 1919, and sailed for Canada July 2, 1919.

Of the Siberian Force the medical units and their commanding officers were: No. 16 Field Ambulance—Lieut.-Colonel C. A. Warren; No. 10 Sanitary Section—Major H. W. Lewis; No. 4 Advanced Depôt Medical Stores—Hon. Captain J. W. Jefferson; No. 11 Stationary Hospital—Colonel J. L. Potter. There were no nursing sisters. The medical director was Colonel J. T. Clarke, and his assistant, Major T. Morrison. The Force was in occupation from October, 1918, until June, 1919; there were no active military operations, but sick to the number of 2,118 were treated, of whom 466 were other than

Canadians. The bed capacity of all units was 850. When the force withdrew, five medical, two dental officers and four other ranks remained and were attached to the British Military Mission.

### Poison Gas

Poison gas was employed for the first time on the western front by the Germans at Ypres against the Canadians and the French colonial troops, on April 22, 1915. It had been used against the Russians in January, 1915, but failed on account of the extreme cold. Gas shells were discovered at Neuve-Chapelle in March, 1915. Ten days previous to the battle of Ypres there was reason to apprehend such an attack. The enemy appears to have allowed reports of this intention to emanate from their lines to cause alarm. In the diary of the assistant medical director of the 1st Division, Colonel G. L. Foster, an ominous entry appears under date of April 15, "Attended consultation of officers of V Corps, with D.M.S. Second Army presiding. Rumour that this evening the enemy will attack our lines, using an asphyxiating gas to overcome our men in the trenches."

The use of gas in warfare made some kind of protection necessary. At Ypres, where it was first encountered, many men saved themselves by applying a wet handkerchief to the face. On May 2, a piece of folded gauze with an elastic band was issued. In June it was replaced by a large pad to be kept in position with a length of black veiling. Latterly these pads had been saturated with hyposulphite of soda, but in the same month a helmet of grey flannel impregnated with neutralizing salts and furnished with eye pieces was issued. In time a breathing valve was added. In October, 1916, a box respirator was substituted; it was so effective that

with it one could breathe comfortably in an atmosphere that would burn exposed parts of the skin. These respirators were carried by all ranks, and patients in the ambulances were obliged to keep them at hand for immediate use.

The first suggestion for the mask was obtained from a prisoner of war at Vlamertinghe, who had an appliance on his person. This mask saturated with glycerine and impregnated with some alkali was secured by Lieut.-Colonel Wingate of No. 10, British Field Ambulance, on April 24, and was handed over to Colonel T. H. J. C. Goodwin, who at once took it to headquarters at St. Omer for examination.

On April 22 the attack was made. The gas was "largely chlorine but with probably some bromine present." It came rolling and drifting over a front of several miles in a low cloud of yellowish green smoke. It fell first upon the coloured troops who broke and fled. The alarm was great, but the casualties were not numerous. No. 5 Mobile Laboratory was alert, and confirmed an analysis of the gas that had been made in other quarters.

Chlorine was soon abandoned by the enemy for another pulmonary irritant known as phosgene, projected in shells. Carbonyl chloride or phosgene ($Co.Cl_2$) was the chief of all the gases and liquids used for their effects as pulmonary irritants. The clinical features produced by this substance were afterwards carefully catalogued: 1. Catching of the breath, choking and coughing immediately on exposure to the gas. 2. Inability to expand the chest in a full breath after removal from the poisoned air. 3. Vomiting, hurried shallow respiration, and sometimes coughing with an abundant expectoration. Pain behind the sternum and across the lower part of the chest. Fine râles heard in the axillae and over the back. 4. Cyanosis in association either with a full venous congestion

or with the pallid face of circulatory failure. The development of these dangerous symptoms may occur after many hours' delay, and sometimes with unexpected rapidity in an apparently slight case as the result of muscular effort. 5. Death, which may be preceded by mild delirium or unconsciousness.[2]

"Mustard gas" was first encountered on July 12, 1917, between Ypres and the sea. At this time No. 1 Casualty Clearing Station was in the area at Oost Houck, one mile east of Adinkerke. The officer commanding was Lieut.-Colonel C. H. Dickson, and the first casualties from this gas came under his notice. He assigned for the investigation Captain C. S. McKee, who had done similar work in Sheffield. This research lasted for a week, and daily reports were sent to general headquarters where they were handed to Major C. C. Douglas, the adviser on the subject. The enquiry was helped by officers who brought in fragments of gas shells; one of them was badly blistered by carrying a piece of shell under his arm, although it was closely wrapped in paper.

Associated with Captain McKee was Major W. L. McLean. They found the gas to be identical with the form familiar to them in Sheffield, save that the cyanogen group was absent, which made it more difficult to identify. Capt. McKee made over a hundred urinalyses; he found sulphates abundant in three-quarters of the cases and albumen in the remainder. Vomiting was a general symptom, and it was observed that patients were much relieved by drinking soda water. This led to the use of carbonate of soda externally with the most happy result. A treatment for such cases based on these researches was formulated in the Fourth Army. Orderlies and nursing sisters dealing with patients were obliged to wear rubber gloves and have at hand a basin of soda water; the clothing was disinfected or exposed to the air.

On the tenth day of this research Colonel A. E. Ross was visiting the hospital; he informed himself of the procedure, and promptly made preparations against the use of mustard gas on the Canadian Corps. Such an attack was made in front of Loos late in the month. He had taken the precaution to send forward to the advanced dressing stations and aid posts bath-tubs, alkalies, and sleeping suits. Some 700 men were affected, but by the prompt use of warm alkaline baths and fresh garments only 25 of these showed any ill effects on the following day.

"Mustard gas" was the soldiers' term for a chemical substance that produced upon the skin the vesicant action of mustard. It came over in shells known as "yellow cross." The substance was mainly di-chlor-ethyl-sulphide ($C_2 H_4 Cl_2$). The action is vesicant. It may exert its irritant action either as a vapour in low concentration in the air or by direct contact from splashes of the liquid. The liquid or vapour clings to the clothing of men exposed to "gas shells," and slowly exerts its continuously irritant action on their bodies. No irritant effect is felt on first exposure, whatever the concentration may be, but after a delay of two to six hours the skin and mucous membranes begin to react with a progressive inflammation of these covering membranes. There is intense conjunctivitis; the skin turns an angry red, and this erythema is soon followed by blistering of the skin over the face and body. The passage of the vapour down the respiratory tract may cause such severe injury to the lining mucous membranes of the trachea and bronchioles that they are eventually destroyed and slough away. Bacterial infection then seizes upon these raw surfaces, and the patient may die from secondary septic broncho-pneumonia.

Death is never the direct result of the action of the poisonous vapour. From the second day onward through the first and second week severely affected men may die, but only as a result of secondary bacterial infection. This poison therefore differs entirely from the lung irritants such as phosgene which kill directly and speedily by flooding the lungs with oedema fluid. The main features of poisoning from mustard gas are described by the Research Committee, from whose Atlas the preceding paragraph also is taken, as follows: 1. Delay of the irritant effect for at least two or three hours, and then a comparatively slow development of the various inflammatory reactions. 2. Vomiting, and a sense of burning in the eyes, with discomfort in the throat, hoarse cough, and some retro-sternal pain. 3. Intense conjunctivitis that temporarily "blinds" the man. 4. Burning of the exposed skin surface and of the moist areas in the axillae and groin, followed by blistering, excoriation, and brown staining. 5. Inflammatory necrosis of the mucous membrane of the trachea and bronchi, with the secondary development of infective bronchitis or septic bronchopneumonia. 6. Death is relatively uncommon; it occurs later than the first day and only as the result of septic complications.

This Medical Research Committee to which several Canadians were detailed, studied experimentally every aspect of gas poisoning, and issued at least twelve bulletins. Upon the question of treatment they arrived at certain definite conclusions. Bleeding followed by infusion of salt solution is justifiable, at a time when by haemoglobin determination the blood is shown to be concentrated. The early, prolonged, abundant and continuous use of oxygen will control the conditions indicated by cyanosis. Oxygen cannot be relied upon to

improve the condition of patients suffering from "effort syndrome"; it is of no value in the shallow breathing of chronic cases. The injection of calcium chloride and sodium chloride, as recommended in a captured German order, is of no avail. In extensive burns hot boracic fomentations give relief and prevent secondary infection; it may be necessary to submerge the patient in hot alkaline baths. The dressings come away, and liquid paraffin may be applied.

In all of these local lesions a predominating characteristic was the frequency and persistence of the neurotic symptoms, which made the after treatment most difficult. None of the local lesions except the vomiting interfered with the patient's prompt return to duty. There was, however, one group of symptoms which outnumbered all others, both in frequency, and severity, namely, disordered heart action or the effort syndrome. These were most common in phosgene poisoning, but also occurred in a significant number of the mustard gas cases. Rest in bed was absolutely contra-indicated. If the patient complained of severe symptoms, or if he were too fatigued to accomplish any exertion, he was placed in a wheel chair and made to spend as much time as possible in the open air. He was encouraged each day to take a few more steps until he was able to walk without distress. As soon as possible the patient was placed on graduated physical exercise. The most difficult patients of this variety to treat were those who had been confined to bed for a considerable period, either in France or in England.

The majority of the cases were received direct from France, where they had been in hospital for an average period of fourteen days, varying from one to thirteen weeks, while a certain number of the cases came under care after they had been treated in other hospitals in

England. There was a considerable variation in the duration of symptoms. In the mustard gas cases 65 per cent were fit for discharge before the end of the fifth week of treatment in England; while only 35 per cent of the phosgene cases were discharged during this period. In the Canadian service most of these cases were transferred to No. 15 General Hospital at Taplow in care of Lieut.-Colonel J. C. Meakins. In the later years of the war the diagnosis "gassed" was scrutinized with the same suspicion as "shell-shock" in the early days, and that officer refers continually to the "neurotic element" in the case.[3]

The gastric symptoms were most refractory to treatment. They were undoubtedly neurotic, and when apparently cured would relapse just before discharge from hospital. Rest in bed was harmful. Occupation with physical training in the mild cases was most effectual. In the most resistant cases gastric lavage every morning, with dilute hydrochloric acid in water after meals, was of value. Occasionally it was necessary to put these patients to bed for a few days on a milk diet, but in spite of all treatment these symptoms were frequently most persistent.

The chemical substances producing these results were isolated and identified as fast as they were supplied. The result of the analysis was issued down to regiments, battalions, and batteries in monthly bulletins, the most comprehensive being No. 14 of August, 1918. The various kinds of shells containing chemicals employed by the enemy are described under the terms "green cross," "blue cross," "yellow cross," and at least thirty different substances are enumerated. In the main the green cross shells contained phosgene, diphosgene, chloropicrin; the blue cross, diphenylchlorarsine; the yellow cross, dichlor-

ethylsulphide, nitrobenzene, and chlorobenzene. The Austrian shells carried cyanogen, bromide, benzol, and monobrommethylethylketone,—at least that is the sequence of letters in the text.

So much has been heard of "gas" employed by the enemy that the extent to which it was used against him has never even been understood. In the single month of October, 1918, forty-six tons were projected into his lines. Captured German documents and civilian evidence disclose the havoc that was created thereby; they also give high praise to the defensive measures employed against their own gas.[4] But neither side gives full information of the casualties caused in its own lines by misadventure in the use of its own poisons.

### Rations

The medical service never had to cope with cases of under nutrition. The food at all times was abundant and unfailing, but not too varied. It was not always well cooked, for a cook became a cook by a brevet conferred by himself. Schools of cookery were set up in England where well-meaning women taught the cooks to cook new dishes badly, and spoiled their natural instinct for more familiar fare. The qualification of a cook was largely negative. He was entitled to ride on the baggage wagon, and a man who could not march on his feet became a cook automatically, if the place were not already filled. It was always a mystery how the French soldiers fed themselves. A group would be seen seated around a fire on which a *marmite* was boiling, but it was never apparent how they provided themselves with the chickens, vegetables, and other dainty morsels they put into the pot. Their service was less systematized but very

effective, and their food more tempting than the English rations.

The average daily cost of the rations issued to Canadian troops in England in 1917 was 14·14 pence, and in 1918 it had risen to 14·92 pence. This was somewhat reduced by the amount of duty refunded on dutiable commodities and by the sale of by-products.

Alcohol was issued in the form of rum, but only at times when an officer thought it necessary, and the accuracy of his negative judgement was often questioned. The ration could be supplemented by a mild beer or a thin wine from estaminets, and there being no duty charged, a bottle of standard whisky could be imported privately for the equivalent of eighty cents. The American army included no alcohol in its war ration; in the German army 1/10 litre of spirits was allowed in the "special field ration"; the French war scale included 1/4 litre of wine daily, with 1/16 litre of brandy which might be issued by order.

The feeding of Canadian patients in England, which for a time had been under the control of the Quartermaster-General, was taken over by the medical branch. He had control of all food supplies and the selection of diets for the troops in training, but the Director-General of Medical Services demanded that the medical officers in charge of patients should have the same power to determine the diet each patient required as in prescribing the medicine that was essential for the case. The principle was to establish a few classes of diets, and add to the simpler ones the extras that were required from day to day for each patient as his condition changed. The results proved that by this means it cost only two pence a day more to feed patients in hospital than troops in training.

The technical difference between diets "for patients" and "rations" for all other soldiers had been clearly established and laid down in regulations for many years. A system was now created to carry out the supervision of feeding according to the varieties of food that were available, for the accounting of food supplies, conserving of waste material, growing and accounting for agricultural products produced in the hospital gardens. This procedure required a special staff of accountants, inspectors, and supervisors. The magnitude of the task can be understood when it is remembered that the hospitals under Canadian administration in England were feeding daily twenty thousand men; but one can scarcely imagine the care and labour expended by the nursing sisters in preparing delicate dishes for those extremely sick. Still, it is possible to surmise what a task it must have been to prepare and serve over 80,000 meals daily. In Canadian hospitals in England alone during the year 1918, there were more than 29 millions of meals prepared and served. In the diet scales as finally revised, caloric values varied from 6,150 for tuberculous patients to 3,840 for ordinary active treatment cases. Soldier personnel received a ration similar to that fed to the British and American soldiers undergoing training at home; the gross caloric value being 3,740, and for women employees 3,240 calories.

The saving of waste material—fats and bones—was begun in 1917, and during the two years following 28,835 pounds sterling was obtained by the sale of these products. It has been estimated that apart from the money, sufficient glycerine-bearing fats were recovered to provide propellent explosives for nearly 200,000 shells. Wherever possible vegetable gardens were managed by hospitals, the total area of cultivation in 1918 being 64 acres. These,

besides providing an ample supply of vegetables, afforded convalescent patients a profitable and wholesome recreation.

The following tables show the numbers fed in Canadian hospitals in the United Kingdom from January 1, 1918, to March 31, 1919, and the cost of feeding:—

NUMBERS FED

| Class | Daily Average | 15 months Total | Meals served |
|---|---|---|---|
| Patients | 15,661 | 7,126,155 | 28,504,620 |
| Personnel | 6,052 | 2,753,883 | 11,015,532 |
| | 21,713 | 9,880,038 | 39,520,152 |

COST OF FEEDING

| Diet Scale | Class of Patients, including officers, subsisted May 11, 1918, to January 31, 1919 | Average Daily per Capita Cost in Pence |
|---|---|---|
| A | Tuberculous Patients | 52·041 |
| B | Convalescents undergoing physical training | 21·623 |
| C | Active Treatment Cases | 23·462 |
| D | Military Personnel, Women, and Civilian Personnel | 18·017 |

## Pensions

The subject of pensions is intimately associated with the medical service. Whilst it is true that care and treatment will reduce disability, it is also true that good care and treatment will increase the number of disabled who live to draw pensions. The medical officers were

employed for the final examination of all soldiers upon their discharge, for the re-examination and treatment of pensioners, and as advisors to the commissioners. Under an order dated 3rd June, 1916, a Board of Pension Commissioners was created, consisting of three members who were to hold office for ten years, and their decision was to be final. Pensions were to be determined by the disability of the applicant without reference to his occupation previous to enlistment; each case was subject to review at the end of a year, and no deduction was made on account of industry and enterprise in work; vocational training was offered, and artificial limbs were supplied. For the rank and file in each case of total disability the sum of $480 was allowed; for a lieutenant, $720; for a captain, $1,000; for a major, $1,260; for a lieutenant-colonel, $1,890; for a brigadier-general, $2,700.

Pensioners fell into six classes according to the degree of disability, and received corresponding awards. Loss of both eyes, hands, or legs, warranted payment of the total assigned to the rank; loss of one hand and foot, 80 per cent; loss of one hand, 60 per cent; loss of one eye or foot, 40 per cent; loss of one thumb, 20 per cent; minor defects, a small gratuity. In addition, a grant was made of six to ten dollars a month in respect of each child. A widow drew a pension equal to the second class until marriage only; a dependent mother in certain cases might draw a pension of the third class. Corresponding rates prevailed in the Naval Service.

Although the medical service had no especial concern in the subject of pensions the board proceedings were of inestimable value in cases where men were disposed to magnify their disability. The Americans with the burden of pensions arising out of the Civil war yet upon them possibly went too far in the precautionary

measures they took. They could not with speed clear the field of wounded on account of the detailed examination to be made on the spot, and the recording of answers from men who were not so alert of mind and speech as a candidate for life insurance in a quiet room.

The pension rate in Canada is by far the highest of any country in the world. For a pensioner with a wife and three children, which may be taken as the average, the rates in dollars are: Canada, 1,644; United States, 1,200; England, 879; New Zealand, 1,138; Australia, 1,043; South Africa, 759; France, 660; Italy, 372; Germany, 316. A dependent widow and three children receives in Canada 1,164; in the United States, 570; in England, 635; in New Zealand, 885; in Germany, 218 dollars.

The total pensions paid in 1922 on account of the Great War were 30 million dollars, of which 12 millions went to dependents of deceased soldiers. For the five-year period the total expended was 110 millions. The number of persons drawing pensions on March 31, 1922, was 64,739; of these 45,133 were disability pensioners. In the medical services the return for that date was: officers 236, nursing sisters 233, other ranks 1,432. In the dental corps there were 17 officers and 26 other ranks drawing pensions, a total of 1,944.

### Medical Museum and Descriptive Catalogue

The formation of a Canadian Medical Museum is the result of action taken by the British Medical History Committee, immediately after its inception in November, 1914, for the collection of pathological material for war museum purposes, by the medical units operating in the expeditionary force. All specimens collected were to be technically the property of the War Office, and were

to be forwarded in the first place to the official receiving depôt in England; but they were to be marked by the hospitals or clearing stations collecting them with the name of their ultimate destination in the hospital or university from which the unit collecting them had been drawn.

The origin of the British army collection itself is bound up with that of the British committee for the preparation of a Medical History of the War; for the collection was from the first recognized to be an integral and indispensable part of the work of the historical committee. "Such specimens," in Sir Arthur Keith's words, "are original documents. They constitute an original and reliable source of knowledge for all time, and they supply the most valuable basis possible for present and future medical and surgical treatment of the diseases and injuries of war, and are, therefore, to be recognized as the basis of its medical history." A similar conception early in the American Civil War was the origin of the celebrated Army Medical Museum and Library at Washington.[5]

In May, 1915, the Council of the Royal College of Surgeons came to the assistance of the committee, and their museum was made the official depôt for the reception of all pathological material. A revised circular memorandum containing explicit directions for the collection, preliminary preparation, and shipment of material was issued to all parts of the war zone. The staff of the Royal College of Surgeons, with Sir Arthur Keith and Sir Ernest Shattuck at the head, assisted by many volunteers, undertook the work of dissection and preparation of the specimens and the index of records. Eighteen months later the results were presented in a great Imperial exhibit.

One of the most important features of this exhibit both from the technical and scientific standpoint was the collection of diseases and injuries of bone, prepared by Major L. J. Rhea as pathologist to No. 3 Canadian General Hospital. These specimens were macerated and mounted in the hospital, and in spite of the difficult conditions imposed were brought to a high degree of perfection, the delicate process of repair in bone being replaced in situ with the aid of *x*-rays made during life. In addition, each specimen was made the subject of a complete clinico-pathological study carried out with the assistance of the surgeon in charge of the patient during life. The whole was a collection unique in the history of war, and a brilliant example of the triumph of personal skill and intelligent collaboration over serious difficulties. It has been sent forward intact by the British Government with the remainder of the material of the Canadian Army Medical Museum, and now constitutes one of its most important sections.

Immediately upon the close of the Imperial exhibit arrangements were made for the dispatch of specimens to the various countries to which the units collecting them had belonged. In March, 1918, the first consignment of specimens destined for the Canadian Army Medical Museum reached Canada. In accordance with the policy carried out in England of making the Royal College of Surgeons the central receiving depôt, it was decided to make the pathological museum of McGill University, the staff of which had concentrated on the work of museum preparation for many years, the official receiving depôt for the collection. Permission having been given by the university authorities, the consignment was duly received, and was immediately put in order and exhibited by permission of the government at a meeting of the Canadian Medical Association held at Hamilton May 27-June 1, 1918.

83635—21½

The next step was taken in January, 1919, when it was finally settled that the preparation, mounting, and cataloguing of the entire pathological material should be carried out at McGill University under the charge of Dr. Maude E. Abbott, curator, the curator being permitted to indent on stores, and the administration being controlled by the Director-General of Medical Services at Ottawa.

In addition to the material sent forward from the Royal College of Surgeons, the collection has now come to include examples of wax models, casts, pictures, and drawings illustrating plastic and facial surgery; models of orthopaedic surgery; enemy and allied equipment; *x*-ray lantern slides; traumatic lesions of the fundus of the eye; and water-colour sketches of army medical arrangements made under military instructions in the field.

On April 21, 1921, as a result of conferences held on November 25, 1919, and several subsequent occasions, a consultant board was summoned to consider the expansion of the work under a provisional plan submitted, whereby all sections of the museum in which material could be made available, should be elaborated to form a teaching series, and a scientific descriptive catalogue be published.

This catalogue will contain a detailed list of the objects in each series, with clinical history, microscopic appearance, and bibliography attached. Each subject will be preceded by a short introduction bearing upon it, written by the expert or editor in charge of the section. The whole will be published in several volumes, bearing the title, "Canadian War Museum, medical section, scientific and descriptive catalogue." This plan was sent forward to the Militia Council in a series of recommendations signed by all members of the consultant board, and was accepted by a decision of the Privy Council dated June 15, 1921; the sum of ten thousand dollars was appropriated for the cost of preparation of the material and for publication.

At subsequent conferences held in Halifax, July 5, 1921, in Montreal, October 13, 1922, and in Ottawa, December 29, 1921, March 10, and April 18, 1922, the administrative and editorial work of the catalogue was further formulated, and the contents of the several volumes under various subject editors arranged. Each volume will be fully illustrated with pictures of the material in the sections. The work on all sections except those on cardio-vascular disease and chest surgery for which sufficient material has not yet accumulated, is being done at the same time. Volume 1 is ready for the press, and only awaits publication.

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[1] *The War Story of the C.A.M.C.* Adami, p. 259 *et seq.*
[2] *An Atlas of Gas Poisoning.* Medical Research Committee, August 1, 1918.
[3] Medical Research Committee Bulletin No. 7.
[4] Gas Warfare No. 16, October, 1918.
[5] *The Lancet,* Sir W. Osler, October 20, 1914.

## CHAPTER XXIV

### THE MEDICAL SERVICES IN CANADA

The administration of that part of the medical services remaining in Canada was an afterthought. Of the twenty-three medical officers in the permanent force eleven had gone overseas with the 1st Division, and four with the Second. Colonel J. L. Potter remained as acting director.

The first provision for invalid soldiers was made early in 1915, by the appointment of three officials from the medical, engineer, and ordnance service. Events soon proved that a more extensive establishment was required. In May a commission of ten important persons was formed under the direction of Sir James A. Lougheed.[1] This body was known as the Military Hospitals Commission. Only one member had medical qualification, but the Director of Medical Services was made an additional member.

The Commission was authorized to provide hospital accommodation and convalescent homes in Canada for officers and men invalided from overseas. It was to select and appoint medical and nursing staffs, and could draw on the department for equipment and supplies. In short, it was given full control of the care and treatment of all returned invalided soldiers. The Department of Militia and Defence still maintained control of sick from the mobilizing troops; but in October, 1915, it was decided to enlarge the powers of the Commission to include the treatment of officers and men on active service in Canada and Bermuda.[2]

Accordingly, the control of sick soldiers was withdrawn from the Army and vested in a civilian Commission.

The operations of the Commission extended from a few houses privately loaned until May, 1917, when there were 57 institutions with a bed capacity of 3,980. In addition, there were fourteen places where a certain accommodation was available, and 23 civilian hospitals where cases requiring active treatment could be sent. To achieve this result arrangements were made with provincial governments, with health associations, civic authorities, and private individuals throughout the country. In some places it had been necessary to erect buildings, and in others to make considerable structural alterations, so that buildings designed for other purposes might be utilized as hospitals. Owing to the natural desire of the men to be as near to their own homes as possible, these institutions were to be found throughout Canada. Invalids on December 31, 1916, were 2,365, increased by May 8, 1917, to 6,515. Arrangements for insane and tubercular cases were first made with provincial institutions; but later the Ontario Military Hospital at Cobourg was taken over for mental and "shell-shock" cases. The work undertaken by the Commission had grown to such an extent that they were by this time caring for the sick, giving vocational training, arranging for the employment of discharged soldiers, providing dental treatment, and supplying artificial limbs.

The Military Hospitals Commission continued to operate until February, 1918, but during the latter part of its existence a conflict developed between the medical branch of the Department of Militia and the Commission. To define exactly the relative positions of the two organizations an order in council was passed in November, 1917, giving to the Army Medical Corps the medical work in the hospitals and institutions of the Commission. It was found

that this arrangement was unworkable, as neither the Commission nor the Militia Department had control of the patients or of the institutions. Consequently, after numerous conferences, a definite understanding was reached, and by order in council P.C. 434 of February 21, 1918, the name of the Military Hospitals Commission was changed to Invalided Soldiers' Commission; and by order in council 433 of February 21, 1918, certain institutions equipped and operated by the Commission passed under the control of the Department of Militia and Defence.

By order in council 432 of February 21, 1918, a new government department was formed, known as the Department of Soldiers' Civil Re-establishment. By a further order two days later the Invalided Soldiers' Commission was placed under the new department of Soldiers' Civil Re-establishment. It was further provided that all officers and men who had not been discharged from the military forces of Canada should remain under the jurisdiction and control of the Department of Militia, but that upon discharge they should pass, if necessary, to the control of the Commission; that all who continued to require medical treatment on account of tuberculosis, epilepsy, paralysis, or other diseases likely to be of long duration or incurable, or on account of their being mentally deficient or insane, were to be under the control of the Commission. Discharged men who broke down as a result of service, and required further treatment, were to be dealt with by the Commission instead of being re-attested as soldiers. The Commission also retained the control of vocational training in the hospitals before the men were discharged, and of subsequent re-education.

In accordance with these arrangements, institutions having a total capacity of 12,359 beds were transferred to the Department of Militia and Defence; and institutions having a capacity of 5,575 were retained by the Invalided

Soldiers' Commission. The number of institutions taken over was 51; the number retained 27. In both cases the institutions were scattered all over Canada. This arrangement remained in effect until demobilization was complete; after that the institutions managed by the Militia Department were gradually closed or handed over to the Department of Soldiers' Civil Re-establishment into which the Invalided Soldiers' Commission had been merged.

By the year 1918, the work of the medical service in Canada was comparable in magnitude and complexity with that being done by the corresponding branch of the service in England. In the first six months 68,818 troops embarked and sailed overseas; thirteen training camps were in operation until October; since the beginning of the war there had been 549,339 enlistments of which 19,658 were in the medical services; hospital beds equipped were 12,282, and 111,175 patients received treatment.[3]

In 1917, the policy was adopted of employing officers from overseas to replace those officers who could give only a part of their time to military work. In April, Colonel J. T. Fotheringham, Assistant Director of Medical Services of the 2nd Division, was recalled from France, and later assumed command of the Army Medical Corps in Canada, with the rank of Major-General. These changes resulted in better administration, improvement in medical boards and returns, lessened stay in hospital, marked decrease in the number of out-patients and quicker procedure in discharge.[4]

But General Fotheringham began his administration under a fatal disability. He found that the military sick and wounded were being cared for by the Military Hospitals Commission, a civilian body, whereas under the Geneva Convention, to which every civilized sovereign power had subscribed, it was an indefeasible principle that

the military sick and wounded shall be cared for by military authority. This Convention is the warrant under which all army medical services are constituted, the foundation of that fabric wherein the pains of war are assuaged. The medical personnel, like other military bodies, must be under one control and yield obedience to a single authority. In an army the various arms are so interdependent that even the professional duties of the medical service can only be effectively performed with a strict observance of military principles and regulations.[5] It was not until February 21, 1918, that these essential tenets were recognised, and it was April 1 before the hospitals were completely controlled by the military medical services. It was June 24 before the new policy had full effect.[6] With the replacement of civilian practitioners and militia officers by officers with experience overseas there was greater contentment and submission to discipline on the part of the patients, due to that sense of comradeship which is engendered in all ranks by active service.

In the meantime the medical service was occupied with the provision and training of reinforcements, preserving the health of the troops and preventing disease, carrying out the medical provisions of the Military Service Act, and caring for soldiers invalided from overseas. Under this Act which came into force on August 29, 1917, the work of the officers was immensely increased. From September 22 to December 31, 1917, medical boards examined 260,165 men, of whom 126,253 were in the first category; and during the year 1918 they examined 101,440 of whom 54,113 were in the first category, making a total of 361,605 men examined. Of these 181,229 were found physically unfit for service in the field, that is, over 50 per cent.

The service was reorganized to conform with headquarters overseas. A general officer was appointed in charge of all hospitals; an assistant director was placed in charge of embarkation; a board of consultants composed of six members was formed. Each consultant represented some well defined division of medicine and surgery; he had a recognized place in university life, and in addition had at least two years' experience in his specialty overseas. Departments were created to deal with personnel, appointments, promotions, and transfers; with statistics and returns; with medical supplies and technical equipment; with the nursing service; with the museum and library; with the economy of food and the disposal of by-products. An assistant director was appointed in each district, and a liaison officer overseas, whose business it was to keep the service in contact with continental ideas on medico-military work. Provisional schools were established for instruction in orthopaedic surgery, physio-therapy, neuro-psychiatry, and venereal disease. A special department was created for the prevention and control of venereal disease in the forces by segregating the victims in special hospitals where expert advice would be available and technical methods employed. Special centres were established for cases of cranial, facial and other injuries requiring unusual surgical and dental skill and equipment. The duties of paymaster, transport, and medical officers were made to conform so that delay in transfer of patients from hospital-ships to ambulance trains was avoided.

Under the Military Service Act undergraduates in medicine were transferred to the medical corps. They attended university schools, received pay, wore uniform, and were subject to military duty. When the school was not in session they served in some medical unit. Upon graduation they might receive commissions. Matriculants in

medicine might be chosen to attend schools. Qualified physicians ordered to report under the Military Service Act were granted leave of absence without pay, until their services should be required as officers.[7] Training depôts were established from which reinforcements for overseas were promptly available; the training was the same as that given at Shorncliffe. These depôts provided staff and personnel for camp hospitals and sanitary duties.

The work of these co-operating departments will bear some exposition, if only to dispel the delusion that the heaviest of the burden was borne by the men in the field. Those men were continual witness of the splendid and impassioned drama of war; they suffered no discomfort after they had learned to disregard it; they were provided with raiment and daily food; they experienced that mild mental exhilaration which accompanies the imminence of death; obedience was simpler than freedom, and routine of duty was a support on which they could lean. In England there were long periods of idleness with, of course, a corresponding boredom, tedious and tiresome days filled with petty administrative detail. In Canada the work was done with little hope of recognition, in an atmosphere of comment, criticism, and suspicion. The grumbler, the malingerer, and the neurotic never failed to find an audience equally neurotic, and ready to lend an ear to murmurings and complaint.

When the medical service in April, 1918, took over the duties previously performed by the Hospitals Commission, the situation was thoroughly considered by the director, by officers appointed for the purpose, and by the medical consultants. Their policy and plan was adopted by the Privy Council.[8] It was estimated that 18 per cent of the force would return to Canada as casualties. On the English and French fronts the percentage was fourteen.

The number of hospital beds required in each district was calculated from the enlistments, and 17,000 was the total number assigned, with an estimate of 800 dollars for a bed of convalescence.

During the period from January 1 to October 31, 1918, admissions to hospital for sickness from troops not yet gone overseas were 43,312, with 852 deaths; influenza was responsible for 23 per cent of these admissions, and during the height of the epidemic 49 per cent. It caused 51 per cent of the deaths; pneumonia came next with 20 per cent. From January 1 to July 31, 1918, medical boards to the number of 171,717 were held; and from November 1, 1918, to September 30, 1919, the number of boards was 129,728. During the latter period 53,790 cases were treated in hospital, and in the earlier period 111,175 cases in 12,282 beds. There were 404 nursing sisters on duty in Canada, and 1,795 returned from overseas. A registration of all diseases was made, and 190,000 casualty cards were prepared. From June 14, 1916, to guard against loss of public funds, all ranks upon discharge for any cause were medically examined, and the report inscribed on the original attestation papers.

A committee was formed in Ottawa from the various departments concerned—public works, engineers, medical service—and the first meeting was held March 20, 1918. Hospitals were built, or acquired, in the 11 military districts at places extending from Charlottetown to Victoria. Up to the end of November 10,876 casualties were received.[9]

At each port through which troops were passing a medical officer was stationed with officers from each of the other branches, forming the Clearing Services Command; and corresponding officers with nursing sisters and orderlies were attached to the permanent conducting staffs in charge of all inward and outward transports. Under this system the

medical and other documents of incoming troops were completed at sea; the clearing depôts at the ports were abolished, the transports and hospital ships were emptied, and troops were dispatched without delay to their various home districts.[10]

The board of consultants took knowledge of 43,000 soldiers passing through the hospitals, and any patient remaining more than sixty days was made the subject of special scrutiny. Their duties were not merely medical; they advised on all matters pertaining to hospitals and to the administration of them; and, most important, they were to restrain the zeal of citizens—patriotic or mercenary—who clamoured for the erection of hospitals in their towns.[11] The success they achieved is a matter of estimate. The procedure in Charlottetown may serve as a basis of calculation. The local authorities asked for a hospital of 50 beds; they were given a hospital of 200 beds. A wooden building was erected at the cost of 597,548.84 dollars. Between November 15, 1918, and April 30, 1919, the dates of opening and closing, 201 patients were admitted, and remained an average of 45 days. The capital cost was therefore 2,987 dollars for each patient, or 65 dollars per day of his residence. Deduction must be made on account of any service the hospital may have rendered after April 30, and for its present value, although it has now been vacant for several years. A committee on Research, composed of three medical officers and three professors, was authorized as late as April, 1919, but they never went much further than the publication of two pamphlets and the announcement of what further they proposed to do.[12]

The shock of war produced deplorable effects upon unstable minds, extending from functional derangement to definite insanity. With the exception of the military hospital at Cobourg there was no place in Canada where

soldiers suffering from functional and organic disease of the nervous system could be adequately treated. For such cases a series of wards was established in Montreal, Toronto, Winnipeg, and Vancouver. Cases amenable to treatment by the now familiar method of suggestion were returned to civil life, and the insane were transferred to provincial asylums.[13]

By October, 1918, the medical services in Canada demanded the strength of 913 officers, 527 nursing sisters, and 4,012 other ranks, besides civilian help which yielded a total of 6,390 persons, as compared with 16,001 who had gone overseas.

Montreal, Quebec, St. John and Halifax were great military ports where medical routine must be followed and emergencies met. In March, 1916, a ship arrived suddenly by night at Halifax with West Indian troops of whom 103 were frozen and required capital amputations. The ship was diverted from the southern route by submarines, and having no provision against cold the troops suffered disaster.

At the date of the Armistice, November 11, 1918, there were in hospital overseas 43,000 sick and wounded, and in hospitals in Canada 9,784 housed in 59 hospitals. The last hospital ship did not sail until September 11, 1919. In compliance with a demand that suddenly became urgent medical officers were released, especially those required for academic work. On the other hand, it was necessary to obtain a statement of the physical condition of every soldier returning from overseas, and this involved the preparation of half a million records of medical boards. It was essential to retain many officers, and those the most competent, men who had already sacrificed the most; but their resources were exhausted, and they were anxious to obtain once more a footing in civil life. The situation was difficult and threatened to disrupt the entire hospital system:

but loyalty to the service and affection to the Chief prevailed, aided possibly by an increase in pay.

The dental service alone was faced with the problem of dealing with 60,000 troops demobilized in one month, of whom over forty thousand required treatment, and the corps instead of being diminished was increased. In the year 1916, the dental corps performed 605,470 operations, and arranged for 215 officers and 470 men to go overseas. In ten months of 1918 fillings to the number of 173,733 were made, and 439,227 operations performed. During the period of the war 1,350,000 dental operations were performed in Canada.

To make the situation still more difficult, during the last four months of 1918 an epidemic of influenza prevailed in Canada; 11,496 soldiers or 19 per cent of the forces were affected; in some districts the percentage rose to 42. Much study was devoted to the cause, over twenty thousand examinations were made, but the only result of the observations was the discovery, confirmed elsewhere, that influenza is not caused by the bacillus of influenza.

Portland was used for the hospital ships, or ambulance transports as they were now for technical reasons designated, until the end of August, when all the hospitals in England had been cleared. The journey by rail was shorter by eighteen hours, and in winter the climate was less severe. A regular staff of 63 medical officers, eleven nursing sisters and twenty-four orderlies was detailed for hospital trains, and soon became practised in their duties. The cars were rearranged to accommodate 25 cases, and as each car was charged for as containing 20 cases, a saving was effected. During the year 289,948 troops were disembarked, and 32,818 of their dependents. Twenty hospital ships entered, and they required 80 trains for their evacuation; 703 transport trains were dispatched, and all required a medical

personnel of 81 officers, 174 nursing sisters, and 376 other ranks. The strength of the service on October 31, 1919, was 469 officers, 407 nursing sisters, and 2,184 other ranks.

The cost of maintenance in hospitals does not appear to have been excessive. Taking the Toronto General Hospital for comparison as a civil unit, where the cost for a patient for one day was 3·12 dollars, the average cost in the military hospitals was 2·18 dollars. The diets in the one case cost 77 cents, in the other 43 cents. A great saving was effected when hospital diets were substituted for rations issued to personnel. The ration cost of 47 cents was reduced to 39 cents, and in the year the hospitals yielded by-products to the value of fifteen thousand dollars. The daily cost of drugs and dressings was 6·67 cents.

The Medical Service in Canada endured the supreme test in Halifax on December 6, 1917. A collision occurred between the Belgian relief ship *Imo* and the French ship *Mont Blanc,* loaded with ammunition. Fire and explosion followed. A part of the city half a mile square was utterly destroyed, and all parts seriously damaged. Fifteen hundred persons were instantly killed, and a thousand grievously wounded; at least four thousand more suffered minor injuries. The disaster was sudden and unforeseen. The Service in the field was never faced with a more desperate problem. It was met with promptness and success by a strict military procedure.

Lieut.-Colonel F. McKelvey Bell was in charge of the medical arrangements of the district. His institutions were involved in the disaster. Cogswell Street Military Hospital was seriously damaged, yet on the first day it cared for 500 wounded; Pier 2 Casualty Depot and Rockhead General Hospital were destroyed, yet the patients were evacuated with the loss of only one. Camp Hill Hospital with only 280 beds admitted 1,400 patients the first

day. Many were brought in ambulances, carts, wagons, cars, or were carried in the arms of friends. All military hospitals were instantly opened to civilian patients, and the district medical stores supplied every need.

The disaster occurred on a warm, clear, sunlit morning. By 10 o'clock at night a frightful blizzard was raging and two feet of snow fell; but in those twelve hours a tent colony had been erected with 250 beds, completely equipped with canvas flooring, cots, blankets, and stores. Within ten hours a shattered building occupied as an officers' mess was transformed into a hospital, equipped from kitchen to operating room, stocked with food and supplied with medical stores and equipment. This work was done by the Engineers, the Ordnance Corps, and the personnel of the Medical Service, with the assistance of twenty ratings from the American ship *Old Colony*. This ship was converted into a hospital in charge of the surgeon, Dr. F. C. Patterson, and cared for 150 wounded the first day. Captain H. Barratt and Sergt.-Major Anstey are given "the greatest credit for the rapid and well-organized work."

Emergency hospitals and dressing stations were opened throughout the city, and train loads of wounded were sent as far as Truro and New Glasgow. Surgeons and nurses came voluntarily from all parts of Canada and from the United States; after the first day there was no lack. On the morning of December 8, a medical unit of the Massachusetts National Guard arrived. It was composed of 12 surgeons, 20 nurses and two quartermasters; they brought only dressings and instruments; but hospitals, equipment and orderlies were available for them when they arrived. The Rhode Island unit comprising 56 surgeons, and 53 nurses reached Halifax on December 10, and they were detailed to search for patients in private houses. The American Red Cross unit from Boston in command of Dr.

W. E. Ladd with 21 surgeons and 63 nurses, the State of Maine unit of 29 surgeons and seven nurses, and Dr. E. A. Codman with 10 surgeons and six nurses, had arrived on the previous day. The work of these units is described in the official report as excellent, their spirit willing, their assistance generous and invaluable.

In the Medical Service, Colonel F. McKelvey Bell, Captain W. H. Hattie, his assistant, 24 officers, 38 nurses and 43 other ranks were brought to the attention of the Minister of Militia and Defence. A lamentable feature of the disaster was the excess of injuries to the eye. At the first explosion many persons rushed to the windows; a second explosion followed by which broken glass was driven into their faces. As a result 41 persons lost both eyes, 87 lost one, and the sight of 61 more was impaired. In all 3,754 dressings were required at the various stations established in the city, apart from the work in the main hospitals. The management of the wounded in conception and detail was a triumph for the Military Medical Service in Canada.

The following tables show in brief form the variety and extent of the operations of the medical services in Canada:—

PERSONNEL—CANADA

| | 1915 | Dec. 31 1916 | Dec. 31 1917 | Oct. 31 1918 | Oct. 31 1919 |
|---|---|---|---|---|---|
| Officers | 751 | 366 | 738 | 913 | 469 |
| Nursing sisters | 437 | 146 | 357 | 527 | 407 |
| Other ranks | 3,542 | 1,847 | 3,357 | 4,012 | 2,184 |
| Total | 4,730 | 2,359 | 4,452 | 5,452 | 3,060 |

BED CAPACITY—CANADA

| | Dec. 31 1916 | June 1 1917 | June 1 1918 | June 1 1919 | Nov. 30 1919 |
|---|---|---|---|---|---|
| Military Hospitals | 2,384 | 2,449 | 11,667 | 10,920 | 6,176 |
| Civil Hospitals | 4,451 | 4,354 | 713 | 86 | 22 |
| Total | 6,835 | 6,803 | 12,380 | 11,006 | 6,198 |

CASUALTIES TREATED IN CANADIAN HOSPITALS IN ALL AREAS, FROM AUGUST 1914 TO AUGUST 1919

| | |
|---|---|
| 1. Overseas (Europe) | 539,690 |
| 2. Canada | 221,945 |
| 3. Siberia | 34 |
| 4. St. Lucia | 70 |
| Total | 761,739 |

PATIENTS TREATED IN MILITARY HOSPITALS IN CANADA DURING 1918

| | |
|---|---|
| Canadian Expeditionary Force (Overseas cases) | 16,838 |
| Canadian Expeditionary Force (Canada cases) | 59,515 |
| Invalided Soldiers' Commission | 2,328 |
| Soldiers' Civil Re-establishment | 833 |
| Permanent Force | 288 |
| Active Militia | 1,209 |
| Canadian Naval Forces | 801 |
| Royal Canadian Naval Volunteer Reserve | 9 |
| Royal Military College | 129 |
| Pensioners | 178 |
| Civilian Employees | 94 |
| Royal Navy | 24 |
| British Expeditionary Force | 308 |
| Royal Air Force | 6,223 |
| Newfoundland | 20 |
| United States Forces | 763 |
| Polish Troops | 876 |
| Serbians | 160 |
| Coolie Labour Corps | 50 |
| Prisoners of War | 1 |
| Total | 90,647 |

## CLASSIFICATION OF MILITARY HOSPITALS IN CANADA, OCTOBER 31, 1918

| | |
|---|---|
| Active Treatment | 16 |
| Convalescent | 8 |
| Combined Active Treatment and Convalescent | 26 |
| Infectious | 9 |
| Orthopaedic | 1 |
| Neurological | 4 |
| Mental | 1 |
| Total | 65 |

## CLASSIFICATION OF MILITARY HOSPITAL BEDS IN CANADA AS AT OCTOBER 31, 1918

| | |
|---|---|
| General Section | 8,530 |
| Special Section | 987 |
| Infectious Section | 2,097 |
| Venereal Section | 668 |
| Total | 12,282 |

## SUMMARY OF MILITARY HOSPITALS IN CANADA, BY DISTRICTS, SHOWING BED CAPACITY AS AT OCT. 31, 1918

| | | | | | |
|---|---|---|---|---|---|
| M.D. No. 1 | London | 2 | Military | Hospitals | 634 |
| 2 | Toronto | 15 | " | " | 3,424 |
| 3 | Kingston | 4 | " | " | 1,070 |
| 4 | Montreal | 7 | " | " | 914 |
| 5 | Quebec | 4 | " | " | 425 |
| 6 | Halifax | 9 | " | " | 1,480 |
| 7 | St. John | 2 | " | " | 486 |
| 10 | Winnipeg | 6 | " | " | 972 |
| 11 | Victoria | 8 | " | " | 1,545 |
| 12 | Regina | 4 | " | " | 414 |
| 13 | Calgary | 4 | " | " | 918 |
| | | 65 | | | 12,282 |

## MILITARY HOSPITALS OPERATED BY THE DEPARTMENT OF MILITIA AND DEFENCE AS AT APRIL 1, 1918

*Military District No. 1.*—Military Convalescent Hospital, London; Military Station Hospital, London.

*Military District No. 2.*—Base Hospital, Toronto; Spadina Convalescent Hospital, Toronto; College Street Convalescent Hospital, Toronto; Oakville Convalescent Home, St. Catharines; Military Orthopaedic Hospital, Toronto; Victoria Convalescent Hospital, Hamilton; Dunedin Convalescent Hospital, Hamilton; Brant House Convalescent Hospital, Burlington; National Cash Register Building, Toronto; Officers' Convalescent Hospital, Toronto; Military Station Hospital, Camp Borden; Polish Camp Hospital, Niagara-on-the-Lake; Military Station Hospital, Toronto.

*Military District No. 3.*—Queen's Military Convalescent Hospital, Kingston; Fleming Convalescent Home, Ottawa; Ontario Military Convalescent Hospital, Cobourg; Elmhurst Convalescent Hospital, Kingston; Military Station Hospital, Kingston; Military Station Hospital, Petawawa.

*Military District No. 4.*—Drummond Convalescent Home, Montreal; Grey Nuns' Convalescent Home, Montreal; Khaki League Home, Montreal; St. Anne's Military Hospital; Military Station Hospital, St. Johns.

*Military District No. 5.*—Savard Park Convalescent Hospital, Quebec; Military Station Hospital, Quebec.

*Military District No. 6.*—Camp Hill Convalescent Hospital, Halifax; Pine Hill Convalescent Home, Halifax; Military Hospital Pier 2, Halifax; Ross Convalescent, Sydney; Moxham Convalescent Home, Sydney; New Military Hospital, Charlottetown; Military Station Hospital, Halifax.

*Military District No. 7.*—Armouries Military Convalescent Home, St. John; Military Hospital, Fredericton.

*Military District No. 10.*—Manitoba Military Convalescent Hospital, Winnipeg; Deer Lodge Convalescent Home, Winnipeg; Keefer Convalescent Home, Port Arthur; I.O.D.E. Hospital, Winnipeg.

*Military District No. 11.*—Esquimalt Convalescent Home, Victoria; Resthaven Convalescent Home and Qualicum Convalescent Home, Sidney; Fairmont Convalescent Home, Vancouver; Vancouver General Hospital; Shaughnessy Convalescent Home and Vernon Convalescent Hospital, Vancouver; Columbia Hospital Annex, New Westminster; Military Station Hospital, Esquimalt; Irving House Hospital, Victoria.

*Military District No. 12.*—St. Chad's Military Convalescent Hospital, Regina; Moose Jaw Military Convalescent Hospital.

*Military District No. 13.*—Ogden Military Convalescent Hospital, Calgary; Edmonton Military Convalescent Hospital; Strathcona Military Hospital; Calgary Convalescent Hospital; Wetaskiwin Convalescent Home.

## MILITARY HOSPITALS OPERATED BY THE DEPARTMENT OF SOLDIERS CIVIL RE-ESTABLISHMENT, APRIL 1, 1918

*Military District No. 1.*—Freeport Sanitarium, Kitchener.

*Military District No. 2.*—Newmarket Military Hospital; Guelph Military Convalescent Hospital; Whitby Military Convalescent Hospital; Euclid Hall Military Convalescent Hospital, Toronto.

*Military District No. 3.*—Mowat Memorial Sanitarium, Kingston.

*Military District No. 4.*—Laurentide Inn Sanatorium, Ste. Agathe; Lake Edward Sanatorium.

*Military District No. 6.*—Dalton Sanatorium, P.E.I.

*Military District No. 11.*—Sanatorium Balfour.

*Military District No. 12.*—Saskatoon Military Convalescent Hospital; Earl Grey Sanatorium, Regina; Emmanuel College, Saskatoon.

*Military District No. 13.*—Frank Sanatorium.

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[1] O-in-C P.C. 1540, dated June 30, 1915.
[2] O-in-C P.C. 2412, dated October 14, 1915.
[3] M. & D. Memo. European War, No. 5, p. 7, *et seq.*
[4] M. & D. Memo. European War, No. 4, p. 11.
[5] M. & D. Memo. European War, No. 5, p. 23 *et seq.*
[6] C.E.F. R.O. No. 710.
[7] M. & D. Memo. European War, No. 5, p. 93.
[8] O-in-C P.C. 884, April 25, 1918.
[9] M. & D. Memo. European War, No. 5, p. 26.
[10] Ibid., p. 29.
[11] Ibid., p. 30.
[12] M. & D. Memo. European War, No. 6, p. 8.
[13] M. & D. Memo. European War, No. 5, p. 32.

## CHAPTER XXV

### THE RED CROSS

The rights of the enemy wounded were first recognized in the Persian armies; but those rights were not formally established until the year 1743, shortly after the battle of Dettingen, when the Convention of Aschaffenburg was drawn up between the commanders of the opposing English and French forces, the Earl of Stair and the Duc de Noailles. The wounded when captured were to go free on parole, and it was further agreed that military hospitals should be respected as neutrals. The moving spirit was Dr. John Pringle of Edinburgh, who was physician to the Earl of Stair, and afterwards Surgeon-General to the forces in Flanders. His "Observations on the Diseases of the Army," published in 1752, is the immediate origin of modern military sanitation; the agreement after Dettingen is the origin of the Geneva Convention with its significant emblem the Red Cross.[1]

The writer of the history of the British medical services in the war laments that it has been a popular tradition that the regular medical services of an army, either from inadequacy of personnel and equipment or from lack of elasticity and sympathy in administration, are incapable of giving all the care to which sick and wounded are entitled.[2] Civilians are always irritated by the "incompetence" of the army; it is not conducted on "business lines." A business may fail; the consequence is unpleasant but not serious; the manager may go to prison. If a war

ends in disaster, the soldier may be shot; but his death is small atonement for the ruin of a nation. The distinction between war and business, between soldier and civilian lies in that.

At times the result of civilian intervention has an appearance of brilliancy. It comes with an extraneous support which is denied to the soldier; but it moves within the sphere of the army which will interpose when danger is descried. It is short lived, and is not compelled to bear the consequence of its own activity. It is in the medical service that this spasmodic effort has always found its most brilliant achievement. The care of the sick and wounded is not the sole, nor indeed the main, preoccupation of the soldier. At times he must harden his heart to achieve a further end. His resources are limited.

To the civilian mind the suffering of the army is more obvious than the issue of the campaign. The Crimean war affords the modern instance of civilian success in a department where the army appeared to fail. That little affair is now far enough in the background to have become the subject of legend; and legend is always prone to fix itself upon the triumph of the feminine spirit. The excursion of that spirit into the rough field of war was so rare an event that its appearance was acclaimed as a miracle, which indeed it was. This spirit in recent times was embodied in Florence Nightingale, lovingly known as "the lady of the lamp"; but to the French, through an unfortunate mistranslation, as "la dame à la langue." In her person began the operation of the Red Cross Societies and the modern Army Nursing Service as well.

The business of history is to bring legend and miracle into conformity with fact, lest those who come after may be tempted to rely for success upon a miracle which may not occur. A phenomenon like Florence Nightingale is not

likely to be seen again. It was she herself who did most to destroy the atmosphere in which such an appearance could be possible, or even desirable; for the essence of her spirit is now incarnate in the nursing sisters, incorporated into the medical service, and so made to animate the whole army.

Legend is fond of magnifying this unique woman at the expense of the army. With jest and malice a figment of history has been created which is false to both. She came upon the scene with weapons which were denied to the service. Sidney Herbert at the War Office was her intimate friend. Lord Panmure, his successor, gave unfailing support. Her adventure appealed to the great heart of the English people, and she had the whole force of the Government at her command. The Queen "made her the intermediary between the throne and the troops."[3]

Her private means were ample. She brought with her large quantities of stores purchased in Marseilles. She received in contributions seven thousand pounds, and the fund collected by the *Times* was placed at her disposal. Hospitals were being erected by civilian labour. The workmen struck. She intervened, and on her own authority engaged two hundred other workmen, and paid them out of the money placed at her disposal.

The worst of the war was over when she arrived at Scutari, November 4, 1854. The campaign began with the naval action at Sinope, November 30, 1853. The battle of Balaclava had been fought October 25, 1854, and Inkerman on November 5, the day after her arrival. During that winter there was no action; the following summer was only marked by the engagement at Tchernaya, and it was September 11, 1855, before Sebastopol was stormed. With the capture of Kars, the war was brought to an end, November 28; formal peace was declared March 30, 1856, and Florence Nightingale returned to England in July.

With all this equipment at her disposal and all this power at her command, responsible to no one but herself, and with no responsibility whatever for the service at the front, it was easy for her to make the medical officers appear ridiculous. Persons who observe war from the serenity of the base are not to be trusted in their judgement of war as a whole. Denunciation, ridicule, sarcasm, vituperation of surgeons, nurses, and officers up to the highest in command were her continual weapons. The medical director, Sir John Hall, K.C.B., was "Knight of the Crimean Burial-grounds"; Reverend Mother Bridgeman was "Reverend Brickbat." She did not recognize the existence of the front, where the medical officers were compelled to work with tools provided for them, with the usual silent devotion of the soldier. Three of these derided persons won the Victoria Cross during the campaign.

At the outbreak of the present war there was instant activity amongst all societies devoted to voluntary aid; and it became necessary at once to define their functions. The belief prevailed that the Red Cross could be displayed wherever charitable work for the troops was being done and even for personal adornment. It was forgotten that the emblem could be used only by military authority which was responsible for its correct display under penalty of reprisals by the enemy, for it was fundamental to the Geneva Convention that the military sick should be cared for by a military medical service alone.

During the long peace the emblem became debased. It was a convenient name for many manufactured articles. In Canada an excellent "gin" could be enquired for under that designation. Red Cross Societies became popular, and when war broke out they received an enormous accession of money and supplies for the use of the troops. The activity of these societies was so marked that, in the United

States at least, the belief grew up that they had complete charge of all the medical service, including the clearing of wounded from the field, their evacuation, and treatment in hospitals. Ignorant persons who observed that all army medical ambulances, hospital-trains, and stores bore the emblem concluded that these were agencies of some Red Cross Society.[4]

International law has clearly indicated that all such societies shall become a part of the medical service of the army; but in the American mind the "Red Cross" was classed with the Salvation Army, the Knights of Columbus, and other voluntary organizations, responsible to a special division of the headquarters staff, and quite apart from the medical services. The results were "deplorable." The emblem became a stigma. The truth is, the army can do for itself much better than any civilian organization can do for it.

In England the mutual differences between the War Office, the British Red Cross Society, and the Order of St. John of Jerusalem were neatly solved by dispatching the director-general of medical services, Sir A. T. Sloggett, as director-general to France, and also, with the consent of these two societies, as chief commissioner of the joint war committee which the two bodies were then establishing. At the same time Sir Alfred Keogh, who had formerly been director-general and was in France as chief commissioner, was brought back to resume his former place now vacated by Sir Arthur Sloggett. With him went to France Lieut.-Colonel C. H. Burtchaell as staff officer, where Surgeon-General W. G. Macpherson had proceeded eleven days earlier. These three bore that heavy burden of war until the end. Few Canadians came in actual contact with them, but all felt their strong sure hand; and to the sick and wounded it was a kindly hand.

The American Red Cross Society was the only one that gained entrance into the area of operations; but the circumstances were peculiar. The American army has this proved distinction: for the good of the general cause it submitted itself to alien control, and having done so for the first time in history accepted without murmur or complaint all the implications and consequences of that act of self-abnegation. In similar circumstances the Prussians thwarted Wellington, and the Dutch deserted Marlborough. The American divisions were moved and manipulated under French control as if they were mercenary troops, and the medical service was not fully informed of the tactics. Evacuation was through French channels. American personnel were rarely permitted to manage the hospitals. The difference of language, the inability of men to make known their simplest wants, the unusual methods of treatment all created an unsatisfactory condition, "which at times threatened to border on the scandalous."[5]

The French having obtained unity of command were determined that there should be no difference of opinion, and refused to allow the Americans to establish hospitals for their own troops. In these circumstances, and with splendid self-control, the medical service requested the Red Cross Society to appeal to the French for permission to establish an evacuation hospital at Beauvais to serve the 1st American Division, on account of the growing dissatisfaction with the treatment of their wounded. The French agreed, but only on condition that it should be known as a French military hospital with a French medical officer in command. This was the reason for the entrance of the American Red Cross into the area of operations.

The term "ambulance" meant anything from a wagon to a unit of 10 officers and 250 men having all the transport and equipment of a field-hospital. Indeed

it is related that in response to an order for a "field ambulance" to remove a wounded officer a force of that considerable size was dispatched to the spot. In French the term *ambulance* could be properly applied to that splendid American hospital at Neuilly-sur-Seine, equipped with a thousand beds, and having a hospital train of its own; but this hospital was commanded by a French officer. This unit and other elements had been in operation since early in 1915, and when the American army arrived some years later, it was hard for the medical service to supersede the Red Cross in the public mind.

The Germans were the first to recognize and declare the altered status of the "red cross," but in their own rough way they proclaimed a truth. This emblem arose as a symbol of pity at a time when nearly all the wounded in war were doomed to die, when there was no medical service in the modern sense. An epidemic was a catastrophe against which a mere soldier could not contend, a calamity which destroyed a campaign. The sick and wounded were abandoned to camp-followers, to clerics, and women, along with the débris of war. The "red cross" became sacrosanct if not sacred, and to do violence to the symbol a sacrilege.

But in modern times the medical service took on quite other functions. It became an integral part of the army. With the new weapons of sanitation it could save an army from destruction and ensure the issue of a campaign. The humblest medical officer acquired an authority in the minds of the public and in the hearts of the soldiers which no commander could afford to deny. In the old days it was the business of the medical service to clear soldiers out of the line; now it is the main business to keep them in the line, or send them back as soon as possible. During this war there were more admissions to hospital than there

were troops in the field. Had it not been for the medical services many of these would not have lived to enter the hospital, and certainly few would have emerged alive.

The medical officers were armed. The attached transport section of an Ambulance carried rifles and bayonets, and were practised in their use, as well as in the art of giving first aid. Whole battalions came beneath the red-cross flag to be inoculated against disease; combatant officers came for a drink, a meal, or a bath; and all ranks sought the medical service to be freed from the inconvenience and danger of lice. With the best of intentions this integral part of the army could not be dissevered from the combatant part of the army. Many a soldier had " a lift " on an ambulance, and idle ambulance service wagons were borrowed for the transport of material for bivouacs, for horse-standings, and other military essentials as well as luxuries. No Convention is proof against these compliments.

Motor-ambulances were abroad at all hours, and it was putting too great a strain upon the drivers, refusing to give a lift to a detail of sappers weary from their night's work, although specific order against the practice was made. In the Canadian Corps the greatest care was taken to observe the Convention, and there were many instances, not without humour, in which a combatant officer, like a town major, was compelled to relinquish a comfortable billet in a hospital-chateau, which he had occupied since the beginning of the war.

Such scrupulosity was not always observed, and on occasion combatant troops were thoughtlessly billeted under the sheltering sign. One instance will suffice. In the town of Bouchain, on October 27, 1918, a Canadian Field Ambulance was installed in a civic hospital recently vacated by the enemy who had laid a large red cross upon

the roof. This building was just outside the area assigned to the Canadians, and after an occupancy of two days the medical unit was turned out, and combatant troops of a neighbouring division marched in without removing the emblem.

The Canadian Red Cross Society neither found, nor sought, entrance into the area of operations. The field had been too well occupied by the army medical services. The Society was left free to exercise its proper function of giving voluntary aid and comfort. It brought into the austere life of the soldier a touch of the larger humanity, an element of the feminine, for most of its service was performed by women. The regular issue of food and clothing, adequate as it was, lacked something in daintiness, and the accessories that were continually arriving supplied the lack. The soldiers knew they were not forsaken by their womenkind. This generosity was not confined to the Canadians alone; the French, the Belgians, Italians, Russians, and Rumanians shared in it.

From the outmost aid post, along the lines, at the base in England, at the port of debarkation in Canada, the handiwork of kind and sorrowing women was in mute evidence. The profusion of supplies, indeed the very excess and uselessness of much, was a sign that neither the treasury nor heart of the country was exhausted. The society was a reservoir from which the medical service could draw in time of need, and at times the need was great. The officials yielded up the supplies of necessary and ingenious comforts with a discriminating but ungrudging hand, and these officials were always of a nature which knew how to transmit with the gift the spirit of charity and sympathy of which the soldier stood in sore need.

As early as November, 1914, a small depôt was opened in Boulogne, the first work of the first Commissioner,

Lieut.-Colonel J. H. Burland, who took upon his heart a burden greater than it could bear, died as a soldier and, if one may employ the term in a purely military record, as a Christian should. He was succeeded by Lieut.-Colonel C. A. Hodgetts in December, 1914, and he in turn by Colonel H. W. Blaylock in April, 1918.

In March, 1915, a depôt was opened in Paris. In six months 28,000 cases of goods were distributed to the French hospitals alone, and before the end 72,782 cases of supplies were bestowed upon the French sick and wounded at a cost of near a million pounds. In addition, half a million francs were given to French charities; to the army a hospital in Vincennes in July, 1918, equipped and staffed with Canadian personnel, at a cost of seventy-three thousand pounds; a service of motor lorries and ambulances for hospitals. To the other allies were distributed 21,000 cases costing a hundred thousand pounds.

To the Canadian Corps supplies were issued only on the approval of the senior medical officer of the area, and those in the field demanded 56,398 cases. The Society operated a motor ambulance convoy; built recreation huts at general and stationary hospitals, and special wards for pulmonary cases; provided furniture and musical instruments; it opened and operated by voluntary workers a rest house for nursing sisters passing through Boulogne. In the last eight months of 1918, this house afforded rest and comfort for 6,859 sisters and other women workers as they passed. The amount expended upon erection, equipment, and maintenance of buildings in France, including hospital accommodation for 610 beds, amounted to eighty-eight thousand pounds.

In England the work of the Canadian Society was even more extensive. At the end of the year 1915 the central office in Cockspur Street required 16 rooms for the 84

workers, as an information bureau, and a department for prisoners of war had been added. By the end of 1917, forty rooms and four warehouses were required, and in April, 1918, the quarters were moved to a commodious hotel in Berners Street.

Dull figures will do something to disclose at least the extent of that work, and suggest the humanity of it. In the four years 248,673 cases of supplies, assembled from the smallest hamlets, were received from Canada, and of these 113,813 were distributed in England alone. The information bureau required the services of 200 workers and 1,300 hospital visitors; casualty index cards were kept; in one day as many as 1,076 reports were sent out, and a corresponding amount of anxiety assuaged. The names of 387 officer prisoners of war and 4,113 other ranks were recorded. Through the Society they exercised the rare privilege of informing friends of their situation. Parcels to the number of 530,054 and value of 258,630 pounds were issued, including twelve million cigarettes. From Canada was received in cash 1,076,957 pounds, supplies to the value of 2,520,303 pounds, and ambulances valued at 98,460 pounds. These ambulance cars were encountered in strange and unexpected places. The intimate and personal work of the Red Cross was under the continuous care of that indefatigable and devoted woman, Lady Julia Drummond.

In the larger sphere of the Society was the opening of several hospitals: The Duchess of Connaught at Taplow, with 1,040 beds; the Special Hospital at Buxton, with 275 beds; the King's Convalescent at Bushey Park; the Princess Patricia's at Ramsgate; the Petrograd Officers' Hospital in London, as well as one at Joinville-le-Pont, Paris, which was staffed by No. 6 General Hospital. In addition, the Society maintained at Ennismore Gardens a rest house

for nurses of whom 1,525 were entertained. A rest house for officers was opened at Sidmouth where 500 convalescents were received.

A department of hospitality was added, to bring Canadian soldiers within reach of a system already existing in England. In order that officers from the Dominions should not feel themselves strangers and aliens when they were convalescent or on leave, a number of English women formed a plan for their entertainment. The officers were to be sought out and invited as guests to some of the choicest houses in England, where they would be received as friends and even as relations. In Lady Harrowby's group alone there were nearly seven hundred hostesses, who extended hospitality to a hundred thousand soldiers from the Dominions. The Canadian Red Cross maintained a liaison with all these organizations, and secured for Canadian soldiers the inestimable advantages inherent in them.

Upon collateral or converging lines there were many other activities. Patients discharged from hospital on sick furlough and soldiers returning from the front on leave found themselves without friends, save for the meretricious acquaintances of the street; and for place of abode only the squalid lodgings that came within the compass of the poor remnant of their pay. To provide for such a need the Maple Leaf Club was established at 11 Charles street, on August 4, 1915, the first anniversary of the war, in a house generously donated by the Honourable Mrs. Ronald Greville. Indeed the club had a choice of habitation, for the Marquis of Salisbury had made offer of his house. The club was formally opened by Sir Robert Borden. It was under the patronage of Earl Grey, Lord Milner, and Mr. Rudyard Kipling. Mrs. Kipling acted as president of the committee for three years, and the financial arrangements

were undertaken by Lord Shaughnessy, Mr. Robert Lindsay, Mr. G. G. Stuart, and Mr. Huntly Drummond.

Although the Maple Leaf Club was the first residential club for overseas soldiers, the Victoria League had some weeks previously started an important social centre where meals could be had at a reasonable price, and recreation was provided. The Maple Leaf Club had not long been in existence when it was followed by two other residential clubs for overseas forces, the Victoria League Club, and Peel House. Miss Talbot, then Secretary of the Victoria League, and the Hon. Mrs. Graham Murray, to whose initiative the Peel House was largely due, were already on the committee of the Maple Leaf Club.

Their Majesties the King and Queen honoured all these clubs with the royal name so that the distinctive title of each had the prefix, "The King George and Queen Mary." His Majesty suggested that there should be a small joint committee of the three clubs to ensure co-operation. As a result, although each club had an independent committee, all three were represented at a joint conference which met at the Colonial Office, when questions arose which were common to all.[6]

The first house had 110 beds. Those who were fortunate enough to gain entrance found food and a warm bed, a hot bath, fresh underclothing, a dressing-gown and slippers, all at a charge of three shillings a day. The greatest boon of all was the cleansing of clothing and uniforms, and a place to store equipment. The need was so great and so perfectly met that additional houses were taken; branches were established in Connaught Place, at Victoria Station, in Elizabeth Street, and in Grosvenor Gardens, where in addition a large hut was erected. When the armistice was signed the demand for accommodation was not less but even greater. The War Office equipped the large swimming

bath in Buckingham Palace Road as a dormitory, which had the advantage of being heated by steam; a house in Eaton Place was acquired, and an extensive floor was supplied in the British Columbia building on Regent Street.

Finally, a canteen was established at King's Cross to supply food, rest, and storage of equipment for soldiers proceeding northwards. In this hut during one month 30,893 meals were supplied, and 11,200 kits stored. In the end the accommodation extended to fourteen houses and two huts. The total of beds occupied by men on leave, from August, 1915, until the clubs closed in the late summer of 1919, was 565,830; the number of meals served was 1,052,891. Cheques to the value of nine million dollars were cashed, and three million dollars were taken on deposit. The greater proportion of the men housed at the clubs were Canadians; but at the central hut for meals, in Grosvenor Gardens, the guests included Australians, New Zealanders, South Africans, Newfoundlanders, and men from the United States. The club was supported by voluntary contributions which came from all parts of Canada, especially through the various chapters of the Imperial Order of the Daughters of the Empire. The governments of Ontario and of British Columbia were generous. The Canadian War Contingent Association with Mr. J. G. Colmer was unfailing in support, and English friends willingly assumed part of this burden in addition to their own. Mr. Rudyard Kipling sent a hundred pounds with a most handsome letter.

It would be easy to become ecstatic in praise of the work done by these and kindred bodies. The profound value of it can only be plumbed by the imagination. The workers will never know, for the soldier on whose behalf they wrought is inarticulate and shy. He goes on leave from field, hospital, or camp into a strange world, in a

bitter mood, contrasting his own misery with civil ease. When he discovered how many there were who really did care for him, his temper was assuaged, and he returned to his duty with new heart. A cup of hot coffee is a sign, even as a cup of cold water was.

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[1] *University Magazine*, Vol. XVI, p. 204. J. Playfair McMurrich.
[2] *British Official History of the War. Med. Serv. Gen. Hist.*, Vol. I, p. 208.
[3] *Eminent Victorians*. Lytton Strachey, 1918, p. 136.
[4] Report of Surgeon-General U.S. Army, 1919, Vol. II, p. 1463.
[5] Ibid, p. 1470.
[6] Mary Macleod Moore.

## CHAPTER XXVI

### PAY—PROMOTION—HONOURS AND REWARDS—ROLL OF HONOUR

Three things interest a soldier,—his pay, his promotion, the honours and rewards that may fall to him. For the Canadian medical services the daily pay of officers was the same as in other branches:—

DAILY PAY OF OFFICERS, C.E.F.

| —— | Pay | Field Allowance | Total |
|---|---|---|---|
| | $ cts. | $ cts. | $ cts. |
| Colonel | 6 00 | 1 50 | 7 50 |
| Lieut.-Colonel | 5 00 | 1 25 | 6 25 |
| Major | 4 00 | 1 00 | 5 00 |
| Captain | 3 00 | 0 75 | 3 75 |
| Matron | 3 00 | 0 75 | 3 75 |
| Nursing Sister | 2 00 | 0 60 | 2 60 |

On March 1, 1915, a messing allowance of one dollar a day was added for all grades; lieutenants received the same pay as captains. These rates never changed in other branches of the service, except the field allowance for captains and lieutenants. It did not escape the notice of Canadian medical officers, especially those who had been trained in the permanent force, that the pay in the English and other Dominion medical services was considerably higher than their own, and therefore higher than in other arms. The argument for the relatively higher pay of medical officers was that they were exercising a profession

which they had acquired at their own expense, whilst lawyers, for example, were performing not the function of their profession but one for which they had qualified in common with all others at the public charge. A lawyer who acted as deputy judge advocate general, or a shoemaker who worked at his trade, both received extra pay. The argument was ingenious and persistent.

Under an Order in Council as from June 1, 1918, the pay and allowances of medical officers were increased: colonels, $10.50; lieutenant-colonels, $8.25; majors, $7.50; captains, $5.75. Lieutenants appointed subsequent to June 15, 1918, received $3.60, and not as previously, the pay of a captain. Officers commanding hospitals above a certain capacity received an additional dollar as command pay. After September 15, 1918, the field allowance of captains and lieutenants was increased by one dollar. After the armistice, in order to retain experienced officers in the service, a new scale was authorized: colonels, $15.20; lieutenant-colonels, $13.45; majors, $10.95; captains, $8.70; lieutenants, $5.70.

The following table shows the comparative rates of pay in various medical services at the end of the war.

COMPARATIVE RATES OF PAY, MEDICAL SERVICES

| —— | British | Australian | New Zealand | American | Canadian |
|---|---|---|---|---|---|
| | $ cts. | $ cts. | $ cts. | $ cts. | $ cts. |
| Colonel | 16 99 | 12 77 | 10 95 | 13 70 | 10 50 |
| Lieut.-Colonel | 12 67 | 10 95 | 9 73 | 12 87 | 9 25 |
| After 3 years | 13 89 | | | | |
| Major | 8 17 | 8 51 | 8 76 | 10 95 | 7 50 |
| After 8 years | 8 77 | | | | |
| Captain | 5 63 | 6 32 | 7 54 | 9 25 | 6 00 |
| After 7 years | 6 00 | | | | |
| After 10 years | 6 97 | | | | |
| Lieutenant | 4 88 | ..... | 6 08 | 6 80 | 4 00 |

In making a comparison it must be noted that in the Canadian service separation allowance should be added: colonels and lieutenant-colonels, $2; majors, $1.65; captains, $1.32; lieutenants, $1.

## Promotion

Practically every officer in the medical service received promotion. Before proceeding overseas with their units all lieutenants were promoted captains. It is not equally true that all were satisfied with the degree by which they had been advanced. Yet if the Canadian medical officer in reflecting upon the subject in some gloomy underground abode were only aware of all his American comrade was compelled to endure, he would brood more lightly upon his wrongs. In the American service there were "very few" promotions in the first ten months. Those recommended by the Chief Surgeon were disallowed on the ground that no methodical plan had yet been presented. It was May 19, 1918, before a "comprehensive, legal, and reasonable" plan was prepared, and it was June 27 before it was finally approved. The scheme was of a perfect ingenuity. A numerical value was assigned to certain qualities which each officer was assumed to possess. These were: age, length and nature of actual service, professional experience, administrative ability, energy, and zeal. The staff considered this a "mathematical, practicable, and just method of selection, provided the values given to the different elements which made up the efficiency figure were judiciously apportioned."

This paper roster would in itself be a perfect academic curiosity; but the "best" man might be the very worst that could be assigned to a particular post. Sir William

Osler, for example, would rank very high on the list; he could command a hospital, or with lucidity and charm explain to an advance party how it came about that the rum-jar contained only lime-juice; but he might not acquit himself very well in extricating an ambulance-wagon from a ditch. Colonel DeLaney, himself, maintained a perfect liaison between the English and American services, but experience alone would determine whether or not even he could persuade a transport section that an open airy loft was a more hygienic billet than a snug estaminet. Canadian postings, and therefore promotions were finally made by a human being who had continuously, critically, and sympathetically observed the conduct of officers under his command. And the promotion was made on the spot.

In the American service, however, no great harm was done, since "the medical lists had to be forwarded by mail or cable across the ocean to Washington," and, as one can well believe, "had to undergo long delays at the war department." The summer passed without any promotions except a small list on June 8. One complete list was lost, "either at headquarters or in the cable office," as the Surgeon-General's Report impartially records. It was November 7 before arrangements were made for promotion in the field; four days later the Armistice happened, and all action was at an end. "The best use was made of this short period of the open door to secure 680 promotions; but there remained about 6,500 vacancies for men who were entitled to promotion by law, and by the admirable character of their service." Half of these vacancies were filled by a list published in orders February 17, 1919. Another list of 1,171 received favourable action on May 2, "but several hundred deserving officers whose service dated from 1917 remained without promotion" to the end.

## Honours and Rewards

The number of honours bestowed on officers of the medical service was large. Excluding miscellaneous and foreign awards the medical service received 4,522 honours of which 325 went to Canadians. In proportion to strength the whole service received 24·3 per cent and the Canadians 24·02 per cent. That is, one out of four officers received an honour of some kind.

The most significant decoration is the Victoria Cross, instituted during the Crimean war by a Royal Warrant dated January 29, 1856. In the Crimean war three medical officers won this distinction. It was conferred 579 times during this war. Twelve went to the medical service. Only two clasps have ever been granted, and these were both won by medical officers. Of these twelve Crosses, two went to Canadians, Capt. F. A. C. Scrimger, April 25, 1915, and Capt. B. S. Hutcheson, September 2, 1918.

The following list shows in number the awards to the Canadian Medical Service: Victoria Cross, 2. Order of the Bath, Companion, 8. Order of St. Michael and St. George, Companion, 29. Order of the British Empire, Commander, 15. Officer, 35. Member, 6. Distinguished Service Order, 49. Bars, 4. Military Cross, 158. Bars, 19. Knight of Grace, St. John of Jerusalem, 1. Mention in Despatches, 277. Brought to notice of the Secretary of State for War, 117. Foreign decorations, 44. The dignity of Knight Bachelor, which is not in recent times exclusively a military award, was conferred upon one officer.

To the Dental Corps was awarded Order of St. Michael and St. George, Companion 2; Order of the British Empire, Commander 1, Officer 8, Member 1; Medal for Meritorious Service, 4. Mention in Despatches were 11; brought to the notice of the Secretary of State for War, 59; Foreign

Decorations, 1. The names of those decorated are included in the following lists.

The decorations awarded the Nursing Service were: Royal Victorian Medal, 1; Order of the British Empire, Commander, 1; Officer, 1; Royal Red Cross, 1st class, 64; 2nd class, 253; Bars, 4; Military Medal, 8; Mention in Despatches, 169; Brought to the notice of the Secretary of State for War, 76; Foreign decorations, 50.

The decorations awarded to other ranks were: Member of the Order of the British Empire, 1; Military Cross, 2; Albert Medal, 1; Medal for Distinguished Conduct in the Field, 35; Bar, 1; Military Medal, 343; Bars, 16; Medal for Meritorious Service, 80; Mention in Despatches, 119; Brought to the notice of the Secretary of State for War, 121; Foreign decorations, 29.

### Decorations Awarded to Officers

#### V.C.

Lieut.-Colonel, F. A. C. Scrimger; Captain, B. S. Hutcheson.

#### *C.B.*

Major-General, G. L. Foster; Brigadier-Generals, H. S. Birkett, A. E. Ross; Colonels, F. G. Finley, J. A. Gunn, A. Primrose, J. A. Roberts, C. F. Wylde.

#### *C.M.G.*

Major-Generals, G. C. Jones, J. T. Fotheringham; Brigadier-General, A. E. Ross; Colonels, G. E. Armstrong, F. C. Bell, K. Cameron, H. A. Chisholm, J. M. Elder, F. Etherington, F. S. L. Ford, E. C. Hart, C. A. Hodgetts, W. T. M. MacKinnon, M. MacLaren, S. H. McKee, D. W. McPherson, G. S. Rennie, W. A. Scott, A. E. Snell, E. L. Stone, W. L. Watt, R. P. Wright; Lieut.-Colonels, J. A. Amyot, G. W. Badgerow, S. Campbell, E. G. Davis, J. F. Kidd, G. G. Nasmith, A. C. Rankin. In the Dental Corps, Colonel J. A. Armstrong, Lieut.-Colonel G. Gow.

*C.B.E.*

Colonels, J. G. Adami, J. W. Bridges, J. T. Clarke, L. Drum, P. G. Goldsmith, J. A. Hutchison, W. McKeown, H. M. Robertson, R. D. Rudolf, R. M. Simpson, J. Stewart, C. P. Templeton; Lieut.-Colonels, E. R. Brown, E. V. Hogan, F. W. E. Wilson. In the Dental Corps, Colonel J. A. Armstrong.

*D.S.O.*

Colonels, P. G. Bell, G. J. Boyce, P. Burnett, H. A. Chisholm, W. B. Hendry, H. M. Jacques, T. J. F. Murphy (Bar), C. A. Peters, R. M. Simpson, A. E. Snell, C. P. Templeton, W. Webster, E. J. Williams, R. P. Wright; Lieut.-Colonels, W. H. K. Anderson, W. A. G. Bauld, A. T. Bazin, J. E. Davey, C. H. Dickson, A. S. Donaldson (Bar), J. J. Fraser, G. H. R. Gibson, A. L. C. Gilday, J. N. Gunn, R. H. M. Hardisty, E. B. Hardy, J. Hayes, J. S. Jenkins, D. P. Kappele (Bar), T. M. Leask (Bar), T. A. Lomer, R. H. MacDonald, C. F. McGuffin, T. H. McKillip, J. D. McQueen, G. S. Mothersill, S. Paulin, C. H. Reason, E. R. Selby, G. W. Treleaven, C. W. Vipond, J. H. Wood; Majors, R. M. Gorssline, G. W. Hall, B. E. Kelly, D. W. McKechnie, S. G. Ross, S. A. Smith; Captain, H. G. Young. In the Dental Corps, Majors, J. F. Blair, O. A. Elliott.

*O.B.E.*

Colonels, G. D. Farmer, J. A. Gunn; Lieut.-Colonels, A. E. H. Bennett, P. G. Brown, C. E. C. Cole, H. C. S. Elliot, E. G. Mason, F. H. Mewburn, H. E. Munroe, R. Raikes, C. H. Reason, D. A. Whitton, R. E. Wodehouse, F. A. Young; Majors, J. F. Burgess, S. G. Chown, F. J. Colling, A. W. M. Ellis, J. R. Goodall, A. L. Jones, L. F. Jones, A. F. Macauley, A. Macphail, R. J. McEwen, H. Orr, F. S. Park, W. A. Richardson, R. B. Robertson, P. D. Stewart, S. J. Straight, J. J. Thomson; Captains, H. A. Marshall (Q.M.), J. F. S. Marshall, H. W. Martin, J. S. Ward (Q.M.). In the Dental Corps, Lieut.-Colonels, W. J. Bentley, C. Brown, O. K. Gibson, B. L. Neiley, A. A. Smith, A. W. Winnett; Major, J. F. Kappele; Captain, H. B. Findley.

*M.B.E.*

Majors, J. H. Slayter, E. S. Woodiwiss (Q.M.); Captains, G. T. Brown (Q.M.), W. H. Fox (Q.M.), J. Hutcheson (Q.M.), R. Kirkpatrick (Q.M.).

*M.C.*

Lieut.-Colonels, R. H. M. Hardisty, W. M. Hart, G. E. Kidd, R. H. MacDonald, W. J. McAllister, A. H. Taylor, F. J. Tees, G. W. Treleaven, W. G. Turner; Majors, H. H. Argue, H. M. Barrett, T. H. Bell, J. A. Briggs, W. Brown, H. Buck, F. T. Campbell (Bar), J. P. S. Cathcart, A. B. Chapman, F. C. Clarke, K. E. Cooke, W. G. Cosbie, W. Creighton, H. E. Cumming, H. C. Davis (Bar), E. Douglas, F. F. Dunham (Bar), W. T. Ewing, G. M. Foster, R. J. Gardiner, G. G. Greer, H. C. Hall, H. Hart (Bar), A. K. Haywood, J. S. Hudson, E. S. Jeffery, H. B. Jeffs, A. C. Johnston, C. W. Johnston, A. L. Jones, W. D. B. Kennedy, R. W. Kenny, C. Kerr, F. W. Lees (Bar), R. M. Luton, A. F. Menzies, W. J. E. Mingie, T. W. Moore, J. E. McAskill, D. A. Morrison (Bar), H. W. McGill, W. F. Nicholson, T. F. O'Hagan, L. C. Palmer (Bar), P. Poisson, S. G. Ross, W. H. Scott, J. G. Shaw (Bar), A. H. C. Smith, D. G. K. Turnbull (Bar), H. W. Wadge (Bar), W. L. Whittemore, H. W. Whytock; Captains, W. F. Abbott, J. E. Affleck (Bar), H. C. Allison, A. F. Argue, A. C. Armstrong, C. F. Atkinson, G. R. Baby, S. G. Baldwin, F. G. Banting, T. Barclay (Q.M.), J. E. Barry (Bar), T. D. Bennett, N. D. Black, J. H. Blair, J. P. Bonfield, T. A. Briggs, M. G. Brown, H. M. Cameron, A. R. Campbell, L. P. Churchill, H. A. Cochrane, J. A. Cullum (Bar), F. B. Day, L. D. Densmore, E. J. Dickinson, J. A. Dougan, A. A. Drinnan, H. Dunlop, J. C. Eager, C. P. Fenwick, C. M. Finlayson (Bar), A. G. Fleming, L. H. Fraser, D. D. Freeze, W. C. Givens, G. W. Grant, A. R. Hagerman, W. Hale (Bar), N. M. Halkett, R. T. W. Herald, A. Hines, B. S. Hutcheson, A. D. Irvine, R. B. Jenkins, G. L. Jepson, F. M. Johnson, C. T. Lewis, W. G. Lougheed, B. Lyon, D. C. Malcolm, R. J. Manion, J. R. A. Marin (Bar), J. F. S. Marshall, V. H. K. Moorhouse, W. C. Morgan, H. C. Moses (Bar), J. K. Mossman, R. D. Moyle, F. Munroe, H. R. Mustard, H. B. MacEwen, A. E. MacDonald, R. D. MacKenzie, J. G. MacNeill, G. A. MacPherson, A. McCausland, J. C. McCullough, E. A. McCusker, J. B. McGregor, M. A. McKechnie, A. Y. McNair, J. A. Paré, A. A. Parker, F. M. Petrie, A. S. Porter, H. F. Preston, L. C. Reid, W. M. Robb, A. Ross, W. H. Scott, W. H. Secord, W. E. Sinclair, G. A. Smith (Bar), J. T. Sterling,

C. G. Sutherland, R. H. Thomas, J. E. Tulloch (Q.M.), A. H. Veitch, A. H. Wallace, W. C. Walsh, R. C. Weldon (Bar), R. E. A. Weston, W. H. Whelpley, E. C. Whitehouse, J. W. Woodley, H. G. Young.

*Knight of Grace, St. John of Jerusalem:* Major-General G. L. Foster.

## *FOREIGN DECORATIONS*

*Légion d'Honneur, Croix d'Officier:* Major-Generals G. L. Foster, G. C. Jones; Lieut.-Colonel, A. E. LeBel.

*Légion d'Honneur, Croix de Chevalier:* Colonels, G. E. Beauchamp, H. R. Casgrain, A. Mignault; Lieut.-Colonels, J. P. Décarie and R. deL. Harwood.

*Croix de Guerre (French):* Colonels, A. E. Snell, R. P. Wright; Lieut.-Colonels, W. H. K. Anderson, P. G. Brown, G. H. R. Gibson; Majors, G. G. Greer, B. E. Kelly; Captains, A. C. Armstrong, J. A. Cullum, E. J. Dickinson, O. G. Donovan, J. A. Paré.

*Médaille des Epidémies, "en argent" (French):* Major H. Orr; Captains, C. Bourget, R. Brault.

*Médaille d'Honneur, avec Glaives "en vermeil" (French):* Major, J. A. Lussier.

*Palmes Académie, Officier (French):* Captain, W. A. Smith.

*Médaille des Epidémies, "en vermeil" (French):* Major, J. Lafleur; Captain, J. H. A. Paquette.

*Ordre de Léopold (Belgian):* Colonel, C. A. Hodgetts.

*Croix de Guerre (Belgian):* Brigadier-General, A. E. Ross; Lieut.-Colonel, J. H. Wood.

*Order of the Crown of Italy:* Colonel, C. A. Hodgetts.

*Silver Medal for Military Valour (Italian):* Major, H. H. Burnham.

*Order of St. Stanislas, 3rd class with swords (Russian):* Captain, J. H. Diamond.

*Cross of St. George (Russian):* Captain, C. S. Tomkins (Q.M.).

*Order of St. Sava, 5th class (Serbian):* Major, H. J. Shields; Captain, J. K. Mossman.

*Order of the White Eagle, 4th class (Serbian):* Lieut.-Colonel G. Gow, Dental Corps.

*Order of Avis, Commander (Portuguese):* Colonels, J. M. Elder, C. F. Martin, M. MacLaren.

*War Cross (Czecho-Slovak):* Colonel, J. T. Clarke; Major, T. Morrison; Captain, A. F. Menzies.

*Order of the White Elephant (Siamese):* Lieut.-Colonel, R. deL. Harwood; Captain, J. H. A. Paquette.

### Decorations Awarded, Nursing Service

*C.B.E.*

Matron, E. B. Ridley.

*O.B.E.*

Matron, B. J. Willoughby.

*M.M.*

Matron, E. Campbell; Nursing Sisters, H. E. Hansen, L Herrington, M. Hodge, B. McNair, E. J. Thompson, L. Urquhart, J. M. Williamson.

*R.R.C. 1st Class*

Matron-in-Chief, M. C. Macdonald; Matrons, M. O. Boulter, I. A. Cains, E. Campbell, M. H. Casault, E. M. Charleson, M. M. Goodeve, A. J. Hartley (Bar), L. M. Hubley, J. McG. Macdonald, K. O. MacLatchey, S. C. McIsaac, J. Matheson, G. Muldrew, V. C. Nesbitt, E. C. Rayside, E. B. Ridley, E. B. Ross, E. Russell (Bar), J. T. Scott, A. C. Shaw, K. Shaw, J. C. Smith, M. H. Smith (Bar), J. Stronach, V. A. Tremaine, J. Urquhart, B. J. Willoughby, E. M. Wilson (Bar), F. Wilson, N. M. Wilson; Nursing Sisters, A. B. Armstrong, T. Bloomquist, N. T. Cameron, H. Corelli, M. Cornell, A. Dickson, M. H. Forbes, A. McI. Forrest, M. L. Francis, E. T. Hegan, S. M. Hoerner, A. G. Hogarth, E. F. Hudson, S. M. Jenkins, I. Johnson, S. P. Johnson, A. M. MacMahon, M. McAffee, M. McBride, E. McCafferty, H. L. McIntosh, B. A. Merriman, C. M. Mowbray, W. E. O'dell, E. F. Pense, L. Pidgeon, M. C. Ruddick, C. I. Scoble, H. D. Shearer, B. L. Smellie, L. G. Squire, I. Wilson, F. M. Wylie.

*R.R.C. 2nd Class*

Matrons, Y. Baudry, C. A. De Cormier, E. W. DeMerrall, H. E. Dulmage, B. F. Mattice; Nursing Sisters, E. E. V. Alexander, A. D. Allan, M. J. A. Allwood, A. E. Andrew, J. F. Andrews, S. A. Archard, C. P. Arnoldi, A. J.

Attrill, E. M. Auger, A. Baillie, K. E. Barden, M. Bastedo, E. L. Bell, J. I. Bell, L. Bell, B. H. Bennett, E. M. Best, G. Billyard, B. J. Blewett, M. F. Bliss, M. E. Blott, E. Boultbee, A. L. Bradley, I. C. Brady, L. Brady, L. J. Brand, L. Brock, L. M. Brown, A. L. Bruce, M. E. Bruce, E. B. Burpee, W. M. Byrne, J. S. Calder, C. E. Cameron, E. V. Cameron, E. N. Campbell, M. S. Carr-Harris, A. M. Christie, H. C. Claxton, M. Clint, I. Connor, E. K. Cotter, G. C. Creswell, M. A. Cummings, I. Davies, B. Davison, K. De Bellefeuille, E. L. Denton, E. M. Dewar, E. M. Dewey, V. M. Donevan, C. A. Donelly, G. O. Donkin, M. K. Douglas, A. C. Doyle, E. Drysdale, M. Duffield, M. S. P. Ellis, F. E. Ellwood, E. L. Elmsley, M. E. Engelke, M. C. English, N. J. Enright, M. I. Fearon, S. Ferguson, H. L. Fowlds, A. J. Fraser, E. M. Fraser, W. H. Fray, G. A. French, M. H. Gagne, L. E. Galbraith, M. M. Galbraith, A. M. Gallop, C. Galt, A. V. Gamble, L. A. Gamble, M. U. Gardiner, O. F. Garland, J. M. Gent, J. Glendenning, H. Graham, D. L. Gray, G. A. Gray, L. N. Gray, A. M. Grindley, A. M. Guilbride, G. E. Halpenny, M. H. Hambly, E. L. Hammell, I. M. Harcourt, C. M. Hare, N. L. Harper, A. Hayhurst, S. Heaney, R. Hervey, E. L. Hibbs, A. R. Hinchey, A. E. Hindley, I. Holden, G. Holland, L. Holland, E. M. Holmes, C. M. Hood, A. Howard, M. Howe, M. B. Hubbs, F. A. Hunter, A. Huston, P. A. Ivey, M. C. Jamieson, J. Johnston, M. Johnston, G. I. G. Johnston, H. E. C. Jukes, F. M. Kelly, H. M. Kendall, M. C. Kennedy, K. M. Lambkin, M. Leamy, M. O. Lindsey, C. J. Little, K. Little, B. Lonergan, E. E. Lumsden, J. D. Lyall, H. B. MacCallum, H. H. MacDonald, L. Macdonald, M. MacDonald, A. C. MacDougall, M. MacInnes, H. B. MacKay, O. A. MacKay, H. A. MacLaughlin, K. A. McLeod, M. E. McLeod, M. MacMillan, M. A. MacNaughton, A. McPherson, B. H. Mack, M. R. Marsh, E. Martin, D. H. Massy, G. H. Mavety, F. E. M. McCallum, L. M. McConachie, R. McConnell, M. McCort, G. B. McCullough, R. McCulloch, N. C. McCurdy, E. McDougall, L. McEachren, L. C. S. McGreer, T. McKiel, R. McLean, A. H. McNicol, G. B. McPherson, M. McPherson, H. T. Meiklejohn, N. F. Meiklejohn, E. C. Mercer, M. E. Misner, A. F. Mitchell, E. L. Moore, E. G. Moore, E. L. Morkill, M. E. Morrison, M. Y. E. Morton, C. M. Motherwell, M. Mowat, I. B. F.

Muir, F. Munroe, M. H. Murray, A. H. Nelson, E. S. Nicholson, C. M. Oatman, M. E. Osborne, F. A. Page, K. Panton, M. F. Parkins, M. Parks, E. J. Patterson, M. B. Patterson, E. T. Paynter, E. Pierce, M. E. Price, M. A. Prichard, F. L. Pyke, M. E. Quigley, G. S. Radcliffe, G. Ramsden, G. F. Reid, K. Reid, M. H. Reynar, F. A. Rice, H. H. Rice, M. I. Richardson, M. J. Riddle, H. I. Robertson, J. H. Robertson, S. J. Robley, M. M. Rose, P. Rose, R. A. St. Arnaud, E. G. Saunders, E. Sinclair, I. B. Smith, G. Spalding, G. L. Spanner, H. L. Stark, L. C. Stevenson, A. M. Stewart, M. C. Stewart, M. J. Stewart, A. M. Stirling, I. D. Strathy, M. F. Steele, M. E. Sunley, A. Sutherland, J. E. Sword, A. M. Tate, A. A. Taylor, E. A. Thom, E. E. Thompson, M. S. Townsend, A. A. Tupper, A. G. Turner, E. F. Upton, C. W. Viets, C. M. Watling, B. I. Watson, M. M. Webb, F. C. West, M. White, E. C. Whitlam, E. M. Whitney, F. K. Whittick, L. I. Whitworth, M. E. Wilkinson, B. M. Wilson, D. E. Winter, M. J. Woods, H. J. Woolson, M. Wright, S. E. Young, C. L. Younghusband.

*R.V.M.*

Matron, V. A. Tremaine.

*FOREIGN DECORATIONS*

*Médaille d'Honneur, "en argent" (French):* Nursing Sisters, K. Guérin, E. McInerney.

*Médaille des Epidémies, "en vermeil" (French):* Matron, C. A. De Cormier; Nursing Sisters, L. Baron, F. M. Clark.

*Médaille des Epidémies "en argent" (French):* Nursing Sisters, A. Brochu, C. Brosseau, C. Bryant, E. Champagne, C. Champagne, C. Chicoyne, A. Clouthier, H. G. Dawson, L. Dédine, E. Desjarlais, M. M. Dionne, E. M. Drysdale, M. S. Fenton, M. H. Forbes, M. O. Gauvreau, S. E. Genders, E. Héon, E. V. J. Hill, A. Jalbert, G. I. G. Johnstone, M. B. Lavallée, E. C. Letellier, J. A. MacDonald, C. M. MacDonell, E. Masse, M. L. Maynard, A. Morning-Duffey, M. Perron, E. Pilon, M. F. Proulx, U. Riverin, E. Rousseau, W. D. Schurman, M. A. St. Onge, C. R. Shea, M. A. Tarte, K. Telford, C. Toupin, F. Toupin, M. C. Vadonais, E. Weilbrenner.

*Médaille des Epidémies, "en bronze," (French):* Nursing Sister E. J. Patterson.

*Médaille de la Reine Elizabeth (Belgian):* Nursing Sisters, I. Johnson, E. F. Jones, M. T. Lynch.

### Decorations Awarded to Other Ranks

*M.B.E.*

Serjeant-Major F. W. Thom. In the Dental Corps, Serjeant-Major W. McDerment.

*M.C.*

Serjeant-Majors, E. J. Davis and O. P. Strensrud.

*Albert Medal*

Serjeant V. Brookes.

*D.C.M.*

Regimental Serjeant-Major C. E. McArthur.

Serjeant-Majors, T. M. Brown, W. Buswell, A. E. Clifton, and J. Turner.

Staff-Serjeants and Serjeants, E. Buckby, S. H. Bye, A. L. R. Davidson, F. H. Dent, J. E. Doyle, D. P. Ewen, J. Ferguson, F. Foster, M. Gunniss, W. Mortimer, J. H. MacFarlane (Bar), W. A. Scott, R. Sauter, M. M. Taylor, A. E. Wartman, and J. Watson.

Corporals and Lance-Corporals, L. Bradley, G. S. Gaylord, T. H. Goodeve, J. C. McKinnon, F. C. Norton.

Privates, L. F. Allingham, H. T. Cameron, M. H. Chaplain, R. S. Collins, R. R. Edwards, E. T. Lockhart, H. D. Moses, A. F. MacKinnon.

*M.M.*

Serjeant-Majors, A. P. Disley, C. H. Forbes, W. Keith, P. Mein, J. H. Pilkey, H. C. Studd; Quartermaster-Serjeant G. J. Bowen.

Staff-Serjeants and Serjeants, E. C. Amaron, J. P. Bennett, A. W. Board, D. Brown, J. M. Brown, F. S. Butler, R. J. Cameron, W. J. Campbell, G. H. Carter, A. E. Coutts (Bar), H. Cross, C. W. Crowe, E. Dawson, F. W. F. Dodds, G. C. G. Dodds, E. A. Doughty, J. H. Dyer, D. P. Ewen (Bar), S. S. Griffith (Bar), H. R. Griffiths, G. Grigg, M. Gunniss, G. G. Hall, H. Hall, W. Hampson,

E. J. Harris, F. Harris, A. J. Harvey, P. Henry, A. Holding, J. T. Holman, W. Hunter, D. A. Hutton, M. Kelso, H. J. Latch, J. C. Leckie, W. S. Maguire (Bar), T. Main, S. J. B. Manchester, M. E. Martin, W. G. Merrell, M. A. Millar, E. Miller (Bar), T. Moore, H. Morison, M. Munro, J. McAndrew, J. McCullogh, A. McKee, A. W. McMillan (Bar), N. R. McMorran, A. Nicholson, J. D. Nixon (Bar), J. F. O'Leary, G. Patience (Bar), W. A. Plant, S. Quinn, A. J. Read, E. J. Reid, A. Rowe, H. Sawyer, T. Sharp, B. Sharpe, R. W. Smith, W. R. Stewart, M. M. Taylor, R. J. Thomas (Bar), F. T. Watts, G. C. Weghorn, E. T. Westby, S. E. Whiston, S. J. Wickens, H. Wood, and H. A. Wyers.

Corporals and Lance-Corporals, G. Adam, W. E. Baker, A. B. Banfield, J. T. Bowie, L. O. Brown, W. Cairnie, J. Cameron, W. E. Carr, C. Clarke, J. W. Clarke, O. S. Craik, S. Deans, J. Dickson, A. Duncan, J. M. Elliott, S. Fairham, G. Falconer, C. J. Feaver, R. H. Gale, C. A. Godfrey, H. Grant, R. S. Greenaway, D. Grey, R. G. Harding, F. Hickman, C. W. Hogarth, A. Hogg, R. Horne, R. C. Innis, J. A. Johnston, D. E. Kerr, H. T. Lord, A. J. Loughton (Bar), A. K. Magner, L. E. Mansell, H. Martin, R. N. Mason, W. Menzies, F. J. Miles, R. T. Millner, C. F. Mills, L. Mills, B. M. Mitcheson, W. B. Moffatt, W. M. Morris, W. B. Murray, W. M. Musgrove, D. McLeod, J. Ogilvie, J. Park, W. H. Picken, S. Poxon, J. H. Ritchie, C. Rogers, F. E. Ross, G. M. Salt, T. F. Scott, R. W. E. Sculley, G. Secord, B. K. Smart, E. Smith, J. H. Stacey, T. Swift, T. P. Tebbutt, R. Thompson, W. R. Thompson, G. A. Usher, G. W. Waddington, F. L. Walker, W. D. Watherston, O. G. Watson, C. Yeates and A. Young.

Privates, H. Ahern, R. E. Alleyn, A. Anderson, W. S. Antliff, J. L. Archibald, T. Armistead, E. Badeau, J. A. Bailey, W. A. Bailey, G. B. Bannerman, W. Bardon (Bar), W. H. Barton, R. S. Bassett, R. Bater, J. Bell, J. W. Berridge, W. Bicker, J. T. S. R. Bird, D. A. Black, H. J. Black, J. E. Bowden, A. Bowie, H. F. Brett, J. C. Broadfoot, G. Broderick, A. Brown, R. G. Calder, R. A. Cameron, C. Campbell, T. Canning, G. W. Carmichael, E. J. Casey, H. V. Caton, J. Celle, L. F. Celle, P. Chadwick (Bar), L. Chartier, L. O. Cooney, F. Cope, V. O. Cox, W. J. Craig, A. M. Creighton (Bar), B. L. Crowder, J. Currie, W. E. Currie, T. E. Dalton, G. T. Davis, S. Dow, P. Dubeau, A. W. Eaton, J. C. Eaton, G. L. Ellman, E. D. Emery,

J. Erskine, J. D. Ferguson, R. J. Ferguson, J. Fisher, R. Flynn, G. H. Ford, R. Forrester, J. A. Fraser, S. Fulton, D. Gay, T. F. Gibbons, H. E. Gillingham, A. E. Gilmore, C. E. Glover, S. Gracey, W. S. Greene, T. J. Gribbin, W. E. Griffin, W. J. Griffiths, R. P. Grimes, J. Hall, G. A. Hamilton, M. Hardy, W. J. Hayward, W. J. Healey, G. G. Heffelfinger, H. Henson, W. T. Herriot, F. Higgins, R. L. Hill, W. E. Hill, C. Hitchmough, H. A. Holmes, A. McC. Horne, J. M. F. Irvine, C. A. Johnson, W. A. Johnson, J. Keech, H. D. Kitchen, A. L. Lansdowne, W. Legary, P. J. Leonard, H. Lewis, E. Littlejohn, E. Livingstone, H. Lock, H. W. Lovell, F. Lowe, S. G. Lowes, L. Lowry, W. Lundal, H. Macham, B. R. Maddams, C. E. Maddin, J. Mathews, A. D. Mayer, G. F. Mead, A. Millen, W. Moore, J. H. Moran, A. Morison, H. K. Morren (Bar), G. E. Morrison, R. McArthur, A. G. McDermid, D. K. McDonald, J. E. McGillivray, A. S. McIntyre, G. F. MacKenzie, J. McLachlan, H. S. McLaren, L. G. McLaughlin, J. H. McKibbon, D. MacKinnon, J. F. McLellan, D. McLeod, A. McMillan, R. McQueen, A. W. Neale, C. K. Nicoll, J. A. Nicoll, E. A. Odlum, S. J. Paterson, J. Patton, C. Pedlow, R. R. Penhale, G. E. Phillips, J. Poyntz, L. W. Pratt, J. S. Prentice, J. Pringle, W. Puttick, D. Quiggin, J. Rankin, C. S. Reid, W. J. Richey, E. J. Riley, H. H. Riley, J. M. Ritchie, J. Robinson, A. W. Ross, J. G. Rosser, L. Saint-Onge, S. Schram, C. W. Sellen, J. A. Shields, C. A. Shier (Bar), J. Shorrock, R. B. Simms, F. A. Smithers, J. McL. Sproul, J. Spurge, T. S. Staton, W. Stevens, A. H. Stewart, A. M. Stewart, J. Strachan, A. R. S. Thompson, G. J. Tomlinson, A. J. Tucker, A. Turner, G. Tweed, W. F. Wall, W. Waring, A. J. Waterman, W. J. Watmough, E. Watters, C. Weller, W. F. Whitmore, W. A. Williamson, F. Wilson, M. Wilson, M. W. Wilson, R. M. Wilson, A. Wood, F. S. Woolner and H. Woolnough.

*M.S.M.*

Regimental Serjeant-Majors, W. R. Acker and C. Francis. In the Dental Corps, F. N. Gordon, E. J. Theobalds.

Serjeant-Majors, T. M. Brown, J. Diffey, A. E. Fayers, W. Hill, A. D. Mathews, P. E. Slough, and C. H. Ward. In the Dental Corps, W. McDerment.

Quartermaster Serjeants, C. H. Eastwood, B. D. Furry, C. Hay, G. E. Hubbard, H. G. Iliffe, A. E. Lucas,

C. Mendham, G. Nairn, A. J. Pickman, J. H. Quigley, E. G. Roye, C. V. Stewart, and M. R. Winters. In the Dental Corps, D. G. H. Dodds.

Staff-Serjeants and Serjeants, J. C. Anthony, F. McD. Bill, E. H. Blydenstein, A. Boulger, H. G. B. Butt, H. Counce, J. U. Dick, J. T. Evans, G. Ferris, A. McQ. Gibson, W. Graydon, B. Heap, R. Hetrick, C. S. Kemp, A. A. Long, R. A. Marriott, W. C. Milne, W. E. Morgan, J. A. Morrisey, H. Macdonald, J. C. McGernon, H. Neale, W. G. Neish, R. G. Page, J. Penwarden, W. J. Phillips, H. C. Pimm, J. B. Riddell, P. Riley, J. L. Robertson, H. C. Shaw, J. B. Sibson, T. B. Smith, J. P. Stewart, J. R. Surman, G. H. Taylor, W. J. Taylor, H. Vince, T. W. Whitefoot, and J. P. Winning.

Corporals and Lance-Corporals, J. O. Daley, C. F. Davis, P. A. Last, H. Linder, E. Pover, W. A. Sterling, E. O. Taylor, and R. T. Woodruff.

Privates, J. C. Barrie, S. J. Baxter, W. Kennell-Webb, G. W. Killey, T. F. Lean, J. J. Nichols, W. J. Small, E. Wheelhouse, and R. Williams.

### *FOREIGN DECORATIONS*

*Médaille d'Honneur avec Glaives "en argent" (French)* Quartermaster-Serjeant S. Woods.

*Médaille d'Honneur avec Glaives "en bronze" (French):* Serjeant L. O. Aubin.

*Médaille des Epidémies "en bronze" (French):* Staff-Serjeants and Serjeants, R. Bassetts, E. Benoit, A. Letourneur, and L. Saint-Marie; Corporal, C. A. Bisaillon; Privates, J. A. Juteau, A. D. McLean, and O. Trepanier.

*Croix de Guerre (French):* Serjeants, W. Hamlet and J. C. Kennedy; Privates, D. Levesque and S. H. Miskiman.

*Médaille Militaire (French):* Lance-Corporal W. P. Strike.

*Médaille de Sauvetage "en bronze" (French):* Private D. Decoteau.

*Croix de Guerre (Belgian):* Staff-Serjeant G. Swainston, and Serjeant T. Fulthorpe; Privates, A. J. Collicutt and J. W. Dow.

*Bronze Medal for Military Valour (Italian):* Private W. Bateman.

*Cross of St. George (Russian):* Private F. Turner (3rd Class); Serjeant-Major T. M. Brown (4th Class); Staff-Serjeant W. S. Kelly (4th Class); Sergeant A. Gillespie (4th Class); Private C. S. Tomkins (4th Class).

*Household Medal (Gold) (Serbian):* Privates, A. W. Jones and T. O. Jones.

*Order of the Crown of Siam (7th Class):* Privates, C. F. Dionne and J. G. Sommerville.

## The Roll of Honour

The roll of honour here presented contains the names of all Canadian medical officers who fell in the war, or died while serving. The period included as during the war extends from August 5, 1914, to the signing of the peace of June 28, 1919. The names of those who died from wounds, and of those lost at sea from enemy action are included among the killed in action. A separate list includes the names of those who subsequently succumbed to sickness acquired during the term of service.

The number of medical officers in the whole British army and navy who were killed or died in service during the period of the war was 1,196, of whom 61 were Canadians, 56 from Australia, 16 from New Zealand. Of the Canadian officers, 30 were killed and 31 died while serving. Of the rank and file 4,634 were killed or died while serving. Of these 528 were Canadians. Their names are shown in a separate list. Casualties in the Dental Corps were: officers died of disease, 7; other ranks killed in action and died of disease, 10.

In the whole nursing service, 17 were killed, and 60 lost their lives at sea. The heaviest single loss was 14 nurses, all Canadians, when the *Llandovery Castle* was torpedoed in the Atlantic on June 27, 1918. One other Canadian sister was lost at sea, and 6 were killed or died of wounds.

## *Killed in Action or Died of Wounds*

| Rank and Name | Date | Place |
|---|---|---|
| Lieut.-Colonels— | | |
| R. P. CAMPBELL | 16- 9-16 | Courcelette |
| H. H. MOSHIER | 29- 8-18 | Arras |
| A. W. TANNER | 2- 6-16 | Ypres |
| Majors— | | |
| J. L. DUVAL | 26- 4-15 | Ypres |
| W. L. McLEAN | 9-11-17 | Zuydcoote |
| Captains— | | |
| J. CARMICHAEL | 5- 4-18 | Vimy |
| L. E. CLARK | 8- 6-17 | Lens |
| H. A. CULHAM | 4-10-18 | Cambrai |
| H. DUNLOP | 2-11-18 | Valenciennes |
| ST. C. DUNN | 9- 3-18 | Lens |
| J. C. FORSYTH | 8- 9-18 | At sea |
| G. C. GLIDDEN | 4- 5-15 | Ypres |
| D. E. HOWE | 19- 5-18 | Etaples |
| R. A. IRELAND | 30-10-17 | Passchendaele |
| N. H. LITTLE | 20-10-18 | Denain |
| K. A. McCUISH | 30-10-17 | Passchendaele |
| W. F. McISAAC | 19- 5-18 | Etaples |
| M. A. McKECHNIE | 6- 8-18 | Villers Bretonneux |
| J. G. McNEIL | 12-10-18 | Iwuy |
| E. E. MEEK | 30- 5-18 | Doullens |
| A. A. PARKER | 12-10-18 | Iwuy |
| A. ROSS | 29- 9-18 | Bourlon |
| J. P. WALSH | 28- 7-16 | Hill 60 |
| D. WATERSON | 22- 5-16 | Sanctuary Wood |
| T. WHITMORE | 8- 8-18 | Amiens |
| Nursing Sisters— | | |
| D. M. Y. BALDWIN | 30- 5-18 | Doullens |
| M. LOWE | 28- 5-18 | Etaples |
| K. M. MACDONALD | 19- 5-18 | Etaples |
| A. MACPHERSON | 30- 5-18 | Doullens |
| H. MELLETT | 10-10-18 | At sea |
| E. L. PRINGLE | 30- 5-18 | Doullens |
| G. M. M. WAKE | 21- 5-18 | Etaples |

H.M.H.S. *Llandovery Castle* torpedoed at sea June 27, 1918. The following were drowned: Lieut.-Colonel T. H. Macdonald; Majors, G. W. Davis, W. J. Enright; Captains, G. L. Sills, A. V. Leonard; Matron, M. M. Fraser; Nursing Sisters, C. Campbell, C. J. Douglas, A. Dussault, M. A. Follette, M. J. Fortescue, M. K. Gallagher, J. M. McDiarmid, M. A. McKenzie, R. McLean, M. B. Sampson, G. L. Sare, K. J. Stamers, J. Templeman.

Following are the names of officers who while serving died of disease or accident: Lieut.-Colonels, H. R. Duff,

C. W. F. Gorrell, S. W. Hewitson, John McCrae, R. C. McLeod, H. B. Yates; Majors, H. J. Adair, D. B. Bentley, W. M. Dillon, H. Jones, W. S. Macdonnell; Captains, B. R. Baker, G. H. Bowlby, J. T. W. Boyd, T. G. Brodie, A. M. Cleghorn, F. T. Graham, T. R. Guilfoyle, W. F. Hale, C. D. Hamilton, J. L. Johnston, R. H. Lalande, W. F. Luton, A. F. Marshall, W. W. MacKenzie, M. H. Paterson, J. P. Scott, C. H. V. Smith, R. S. Smith, N. J. L. Yellowlees; Lieutenant, W. McL. McLeod. In the Dental Corps, Captains, W. E. Boyce, R. M. Burgess, H. H. Kerr, W. G. MacNiven, H. P. Thompson; Lieutenants, R. E. Carter, C. F. Hewitt.

Following are the names of Nursing Sisters, in the order of date of death, who died of disease while serving: M. F. E. Munroe, J. B. Jaggard, A. A. Tupper, E. Sparks, S. E. Garbutt, L. A. Davis, I. L. Kealy, A. E. Whitely, A. F. Forneri, A. J. Ross, M. E. Green, M. E. Baker, V. B. Hennan, E. V. McKay, A. St. C. Dagg, L. M. Jenner, R. McIntosh, J. N. King.

## Other Ranks

*Killed in Action or Died While Serving*

| Regt. No. | Rank | Name | Nature of Casualty | Date |
|---|---|---|---|---|
| 536141 | Pte. | ACKERMAN, C. D. | d. of d. | 3-12-18 |
| 1201 | Cpl. | ADAM, G. | k. in a. | 6-11-17 |
| 524501 | Pte. | ADAMSON, B. | d. of d. | 8- 5-16 |
| 531653 | Q.M.S. | ADDERLEY, H. B. | drowned | 12- 9-18 |
| 536319 | Pte. | ADDISON, H. | k. in a. | 20- 5-18 |
| 466197 | " | ALLEN, T. L. | k. in a. | 20- 5-18 |
| 531006 | " | ALLPORT, A. T. | k. in a. | 7-10-16 |
| 1204 | " | ANDERSON, C. | k. in a. | 30 -9-16 |
| 536451 | " | ANDERSON, J. | d., e.a. | 27- 6-18 |
| 26049 | " | ANDREWS, D. | d. of d. | 31-10-18 |
| 527553 | " | ANGUS, H. E. | k. in a. | 20- 5-18 |
| 421053 | " | ANGUS, H. T. | d., e.a. | 27- 6-18 |
| 33555 | " | ANTAYA, T. | d. of w. | 4- 5-17 |
| 1203 | " | ARMSTRONG, J. F. P. | k. in a. | 17- 9-16 |
| 530507 | " | ARMSTRONG, W. C. | k. in a. | 30- 9-16 |
| 525078 | " | ASHMORE, R. H. | d. of w. | 6- 5-17 |
| 523564 | " | ATKINSON, J. | d. of w. (gas) | 15- 6-18 |
| 529530 | " | BACON, G. R. | d. of w. | 30- 9-16 |
| 35011 | " | BACON, H. J. | d. of w. | 24- 4-15 |
| 32861 | " | BADEAU, E. | d. of d. | 25- 1-19 |
| 33004 | L/Cpl. | BAILEY, H. | k. in a. | 17- 9-16 |
| 192 | Pte. | BAILLARGEON, P. | d. of w. | 30- 5-18 |
| 522730 | " | BAIRD, J. J. | k. in a. | 20- 5-18 |

OTHER RANKS—KILLED IN ACTION OR DIED WHILE SERVING
*—Continued*

| Regt. No. | Rank | Name | Nature of Casualty | Date |
|---|---|---|---|---|
| 536234 | Pte. | BAKER, A. | d., e.a. | 27- 6-18 |
| 26669 | Sgt. | BAKER, W. E. | d. of d. | 27-11-18 |
| 33281 | Pte. | BARKER, F. | d., e.a. | 27- 6-18 |
| 50930 | " | BARNSBY, G. E. | k. in a. | 20- 5-18 |
| 642 | " | BARON, J. | d. of w. | 8- 3-16 |
| 527039 | " | BARRETTE, P. J. | d. of d. | 29- 1-19 |
| 526729 | " | BARTON, F. | k. in a. | 3- 7-17 |
| 33021 | Sgt. | BASKETT, W. H. | d. of w. | 7- 5-15 |
| 447049 | Pte. | BATE, W. H. | d. of d. | 23- 2-19 |
| 464163 | " | BATER, R. | k. in a. | 16- 8-18 |
| 33284 | Cpl. | BATESON, G. M. | d. of w. (gas) | 11- 6-18 |
| 1562 | Sgt. | BATESON, W. H. | k. in a. | 6-11-17 |
| 129987 | Cpl. | BEACH, M. A. | d. of w. | 2-11-17 |
| 520096 | Pte. | BEAUDOIN, E. N. | d. of d. | 12-10-18 |
| 143 | " | BEATTIE, S. | d. of d. | 5- 2-19 |
| 530514 | L/Sgt. | BEE, G. E. | d. of d. | 16-11-18 |
| 33289 | Pte. | BELFIELD, A. R. | k. in a. | 26- 9-16 |
| 520131 | " | BELISLE, D. | d. of d. | 18- 2-19 |
| 02568 | " | BENTLEY, J. A. | d., e.a. | 27- 6-18 |
| 528674 | Cpl. | BLACK, D. A. | k. in a. | 15- 8-17 |
| 1921 | Pte. | BLACK E. | d. of w. | 4- 4-18 |
| 782320 | " | BLACKWOOD, J. A. | d. of w. | 6-11-17 |
| 645865 | " | BLATCHFORD, G. | k. in a. | 20- 5-18 |
| 524957 | " | BLOCKSIDGE, B. | d. of w. | 28- 3-18 |
| 524309 | " | BLOOMFIELD, B. | d., e. a. | 27- 6-18 |
| 871099 | " | BOGLE, W. | d. of d. | 10- 2-19 |
| 50972 | L/Cpl. | BONNELL, H. | d., e. a. | 27- 6-18 |
| 950 | Sgt. | BORCHARD, H. | d. of d. | 4- 2-17 |
| 526688 | Pte. | BOSWELL, F. | d. of w. | 20- 9-17 |
| 523508 | " | BOWMAN, W. C. | d. of w. | 8- 8-18 |
| 823242 | " | BRABROOK, F. J. | d. of w. | 12-10-18 |
| 530005 | " | BRADBURY, N. O. | d. of d. | 23-11-17 |
| 529522 | " | BRADY, C. H. | k. in a. | 2- 6-16 |
| 536441 | " | BREWER, A. C. | d. of w. | 20-10-18 |
| 32912 | " | BRISBOIS, A. | d. of w. | 6- 5-15 |
| 524507 | " | BRISTOW, J. F. W. | d., e.a. | 27- 6-18 |
| 2098951 | A/Sgt. | BROWN, D. | d., e.a. | 27- 6 18 |
| 50888 | S/Sgt. | BROWN, G. H. | k. in a. | 19- 5-18 |
| 532362 | Pte. | BROWN, J. | d of w. | 24-11-17 |
| 629925 | Cpl. | BRUCE, C. C. | d. of w. | 6- 5-17 |
| 2009126 | Pte. | BRUNS, F. B. | killed | 25- 6-19 |
| 531658 | A/Cpl. | BRYAN, C. | k. in a. | 13-10-16 |
| 528533 | Pte. | BRYANT, L. B. | k. in a. | 11- 3-18 |
| 3207158 | " | BUCKLE, G. A. | d. of d. | 1- 3-19 |
| 532733 | L/Cpl. | BUNCH, A. F. | k. in a. | 2- 9-18 |
| 34588 | Pte. | BURBRIDGE, A. | d. of d. | 15- 2-16 |
| 526628 | " | BURGESS, W. | k. in a. | 29- 8-18 |
| 527393 | " | BURKE, E. P. | d. of d. | 12-10-18 |
| 34255 | S.M. | CADMAN, V. E. | d. of d. | 28-12-16 |
| 50531 | R.S.M. | CALDWELL, J. | d. of d. | 17-12-17 |
| 02527 | Pte. | CAMPBELL, A. | d. of d. | 20- 9-17 |
| 531709 | " | CAMPBELL, R. T. | d. of w. | 27-10-17 |

## OTHER RANKS—KILLED IN ACTION OR DIED WHILE SERVING —*Continued*

| Regt. No. | Rank | Name | Nature of Casualty | Date |
|---|---|---|---|---|
| 536004 | Pte. | CARDINAL, B. | d. of d. | 10-11-17 |
| 526511 | " | CARTER, N. R. S. | d., e.a. | 27- 6-18 |
| 526924 | " | CASSIDY, W. L. | k. in a. | 9- 9-18 |
| 962 | " | CATES, W. F. | d., e.a. | 27- 6-18 |
| 529322 | " | CHADWICK, F. C. | k. in a. | 19- 5-18 |
| 50883 | " | CHAPPELL, G. A. F. | k. in a. | 27- 9-18 |
| 1238 | " | CHESTERMAN, H. T. | d. of w. | 15-10-16 |
| 142424 | " | CHOCE, J. | d. of d. | 3- 6-18 |
| 530188 | " | CLARK, C. | k. in a. | 16- 4-17 |
| 536231 | " | CLARK, F. | d., e.a. | 27- 6-18 |
| 523415 | " | CLARK, J. F. | d. of w. | 23- 8-18 |
| 536448 | " | CLARK, W. | d., e.a. | 27- 6-18 |
| 107142 | Cpl. | CLARKE, K. C. | d. of d. | 27- 9-17 |
| 550264 | Pte. | CLAYTON, R. | d. of d. | 7-11-18 |
| 523855 | " | CLIFFORD, H. | d. of d. | 23-11-18 |
| 823296 | " | COGAN, A. | k. in a. | 6-11-17 |
| 460919 | " | COHEN, F. | d. of w. | 4- 9-18 |
| 33035 | " | COLLINS, J. | d. of w. | 26- 4-15 |
| 552965 | " | CONRAD, W. S. | d. of d. | 21- 1-18 |
| 2013804 | " | COOK, P. H. | d. of d. | 26- 5-19 |
| 400273 | " | COOPER, S. | d. of w. | 13-11-17 |
| 50937 | " | COPELAND, J. (alias Sellar) | k. in a. | 15- 8-17 |
| 527814 | " | CORBETT, S. W. | k. in a. | 23- 4-18 |
| 910860 | " | CORMICK, H. | k. in a. | 14-11-17 |
| 530107 | " | COSGROVE, A. W. | d. of w. | 28- 8-16 |
| 526621 | " | COSTIN, J. H. | k. in a. | 28- 9-18 |
| 530189 | " | COUTTS, J. | d. of w. | 16-12-17 |
| 523890 | " | COWAN, J. S. | k. in a. | 14-11-17 |
| McG 18 | " | COWARD, W. H. | d. of w. | 14-11-17 |
| 536023 | " | COWIE, W. | d., e.a. | 27- 6-18 |
| 458634 | " | CRIGHTON, D. | k., e.a. | 22- 8-17 |
| 33032 | " | CROSSMAN, T. C. | d. of w. | 3- 9-16 |
| 65230 | " | CROYSDILL, L. E. | d. of d. | 30- 3-18 |
| 524518 | " | CUMING, F. | d. of w. | 20- 5-18 |
| 526671 | " | CURTIS, J. H. | d., e.a. | 27- 6-18 |
| 145844 | " | CUTLER, J. W. | acc. killed | 6- 6-18 |
| 536282 | " | DALEY, K. | d., e.a. | 27- 6-18 |
| 522776 | " | DANIELS, S. G. | d. of d. | 2- 7-18 |
| 529548 | " | DASH, H. G. | k. in a. | 16- 9-16 |
| 34450 | " | DAVIDSON, R. | k. in a. | 31-10-17 |
| 427921 | " | DAVIES, D. | k. in a. | 11- 8-18 |
| 34451 | " | DAVIES, G. T. | d. of w. | 20- 5-18 |
| 33050 | Cpl. | DAVIES, T. | k. in a. | 29- 9-18 |
| 32871 | Pte. | DAWSON, J. J. | k. in a. | 19- 5-18 |
| 823269 | A/L/Cpl. | DAWSON, W. A. | d., e.a. | 27- 6-18 |
| 32792 | Pte. | DEMEULE, E. | d. of w. | 28- 4-15 |
| 3039095 | " | DENNE, A. A. | d. of d. | 17- 3-19 |
| 417264 | " | DESCHENE, P. | d. of w. | 13-10-18 |
| 523810 | Pte. | DICKINS, H. W. | d. of w. | 9- 8-18 |
| 50034 | Cpl. | DICKSON, G. M. | k. in a. | 19- 5-18 |
| 531788 | Pte. | DIER, C. R. | d. of w. | 28- 6-17 |
| 530113 | Sgt. | DIXON, W. E. C. | d. of w. | 12- 4-17 |

OTHER RANKS—KILLED IN ACTION OR DIED WHILE SERVING
*—Continued*

| Regt. No. | Rank | Name | Nature of Casualty | Date |
|---|---|---|---|---|
| 348445 | A/S/Sgt. | DOUGHTY, J. H. A. | acc. killed | 4- 6-17 |
| 16420 | A/Sgt. | DRYDEN, W. H. | k. in a. | 27- 9-16 |
| 536338 | Pte. | DUFFIE, D. W. | d., e.a. | 27- 6-18 |
| 524524 | " | DUGGAN, H. W. | k. in a. | 3-11-17 |
| 522663 | Cpl. | DUNCAN, G. | d. of d. | 22- 8-18 |
| 418883 | Pte. | DUNLOP, A. L. | d., e.a. | 27- 6-18 |
| 532351 | " | EAGLESTONE, E. | d. of w. | 29- 5-18 |
| 766572 | " | EATON, C. | k. in a. | 27- 9-18 |
| 343 | " | EATON, H. E. | d. of d. | 2- 4-19 |
| 50879 | " | EATON, J. C. | d., e.a. | 27- 6-18 |
| 523897 | " | ELSLEY, H. C. | d., e.a. | 27- 6-18 |
| 651122 | " | ELLIOTT, J. E. | k. in a. | 4- 5-17 |
| 523223 | " | ELLIOTT, W. B. | d. of w. | 10-11-17 |
| 33326 | " | ELLIS, J. H. | d. of w. | 21- 5-15 |
| 400200 | " | ELLIS, R. M. | k. in a. | 4- 5-17 |
| 536092 | " | EMOND, F. M. | k. in a. | 27- 9-18 |
| 34598 | " | EPPS, C. H. | d. of d. | 5-11-17 |
| 33003 | " | EVANS, A. | k. in a. | 27- 9-18 |
| 34408 | A/S/Sgt. | EVANS, H. P. | d., e.a. | 27- 6-18 |
| 24 | Pte. | EVERETT, W. | acc. killed | 5- 9-16 |
| 529100 | " | FABRE, E. F. | k. in a. | 1- 6-18 |
| 645609 | " | FALCONER, R. D. | d., e.a. | 27- 6-18 |
| 404334 | " | FINCH, L. M. | d. of w. | 16- 9-16 |
| 781578 | A/Cpl. | FINDLAY, G. | d. of d. | 14-10-18 |
| 164268 | Pte. | FINDLEY, J. B. | k. in a. | 19- 5-18 |
| 522065 | " | FINDLEY, P. L. | acc. killed | 29-11-18 |
| 50039 | L/Sgt. | FIRTH, H. | k. in a. | 19- 5-18 |
| 400110 | Pte. | FISHER, G. D. | k. in a. | 2- 9-18 |
| 532350 | " | FISHER, I. S. | d. of w. | 9-11-17 |
| 34462 | " | FLANNIGAN, T. | k. in a. | 19- 5-18 |
| 50946 | " | FOLEY, J. B. | d., e.a. | 27- 6-18 |
| 10189 | " | FORREST, P. A. | k. in a. | 19- 5-18 |
| 679073 | " | FOWLER, P. | k. in a. | 2- 9-18 |
| 36093 | " | FOX, F. W. S. | k. in a. | 24- 4-15 |
| 527507 | " | FOXLEE, C. H. | d. of d. | 23-11-17 |
| 33339 | " | FRASER, D. C. | k. in a. | 19- 5 18 |
| 530539 | " | FRASER, R. S. | k. in a. | 16- 9-16 |
| 50045 | " | FRASER, T. | d. of w. | 21- 5-18 |
| 50760 | " | FULLERTON, H. | k. in a. | 8-10-16 |
| 34140 | " | FURLONG, R. J. | d. of d. | 21- 8-16 |
| 33074 | " | GALE, A. E. | d. of w. | 12- 5-17 |
| 3084910 | " | GALLEY, F. | d. of d. | 28-11-18 |
| 1989 | " | GARNER, T. J. | k. in a. | 18- 7-18 |
| 522922 | " | GEMMELL, W. H. | d. e.a. | 27- 6-18 |
| 360 | A/Cpl. | GIBSON, L. | d. of d. | 15-11-17 |
| 529064 | Pte. | GILLESPIE, P. E. | k. in a. | 7- 9-18 |
| 814041 | " | GLEN, E. M. | d. of w. | 30- 5-18 |
| 529039 | " | GOBLE, G. | d. of d. | 18- 6-17 |
| 61361 | " | GODIN, J. R. | k. in a. | 8- 8-1 |
| 535505 | " | GOLDBERG, M. P. | d., e.a. | 27- 6-18 |
| 528729 | " | GOLBY, G. E. | d. of w. | 6-11-18 |
| 1995 | " | GOLDSMITH, B. | d. of w. | 15- 5-18 |

## OTHER RANKS—KILLED IN ACTION OR DIED WHILE SERVING —*Continued*

| Regt. No. | Rank | Name | Nature of Casualty | Date |
|---|---|---|---|---|
| 8659 | Sgt. | GRACEY, S. | k. in a. | 15- 8-17 |
| 530542 | Pte. | GRAHAM, W. | d. of d. | 30- 7-16 |
| 522926 | " | GRANT, H. | k. in a. | 16- 9-16 |
| 524308 | " | GRAY, H. H. | k. in a. | 8- 8-18 |
| 527913 | " | GREEN, F. W. | d. of d. | 17- 1-17 |
| 524990 | " | GREEN, P. | k. in a. | 2- 9-18 |
| 401783 | " | GRIFFITHS, W. | k. in a. | 6- 9-16 |
| 523385 | " | GRILLS, S. | d. of d. | 6-12-18 |
| 1642 | " | GRINDLEY, G. H. | k. in a. | 17- 9-16 |
| 50728 | Pte. | GROGGIN, J. | d. of w. | 27- 5-16 |
| 2265 | A/Sgt. | HAINES, E. H. | k. in a. | 19- 7-16 |
| 50486 | Pte. | HALL, C. E. R. | k. in a. | 27- 9-18 |
| 527819 | " | HALL, J. | d. of d. | 14-10-18 |
| 535993 | " | HAMILTON, W. F. | d. of d. | 13-12-17 |
| 530126 | Sgt. | HAMMOND, J. R. | k. in a. | 26- 6-17 |
| 770053 | Pte. | HANNAH, J. | d., e.a. | 27- 6-18 |
| 1645 | " | HANNEY, W. | k. in a. | 16- 9-16 |
| 526528 | A/L/Cpl. | HANSON, G. J. | k. in a. | 9- 4-17 |
| 910920 | Pte. | HANSON, S. | k. in a. | 26- 6-17 |
| 9402 | " | HARDY, W. J. | k. in a. | 19- 5-18 |
| 33354 | " | HARLOCK, M. H. | d., e.a. | 27- 6-18 |
| 532696 | Sgt. | HARRIS, F. | d. of w. | 1-11-17 |
| 33079 | Pte. | HARRIS, B. D. | d., e.a. | 27- 6-18 |
| 527578 | " | HARRIS, J. L. | acc. killed | 16- 1-17 |
| 536276 | " | HARRISON, H. | d., e.a. | 27- 6-18 |
| 524248 | " | HARVEY, G. | d., e.a. | 27- 6-18 |
| 1078160 | " | HEATH, C. | d. of w. | 29- 9-18 |
| 814318 | " | HEATH, D. | d. of w. | 29- 9-18 |
| 523240 | " | HEIDT, G. W. | k. in a. | 9-10-16 |
| 532274 | " | HEMBROFF, E. | k. in a. | 9- 4-17 |
| 531732 | " | HEPWORTH, G. W. | d. of w. | 6- 7-17 |
| 534182 | L/Cpl. | HEPWORTH, S. C. | d. of d. | 2-10-17 |
| 33361 | Pte. | HIGGINS, G. | k. in a. | 27- 9-18 |
| 527718 | " | HIGGS, A. J. | k. in a. | 2- 9-18 |
| 528863 | " | HILL, E. G. | d. of d. | 10- 2-17 |
| 910890 | " | HILL, J. G. | d. of w. | 28-11-16 |
| 1000765 | " | HILLIER, W. F. | k. in a. | 19- 5-18 |
| 34479 | " | HILLMAN, N. C. | k. in a. | 27- 9-16 |
| 522848 | " | HINNELLS, W. | d. of d. | 16-11-18 |
| 34144 | A/Cpl. | HOARE, E. | d. of d. | 29- 6-16 |
| 414995 | Pte. | HOARE, P. J. | d. of d. | 7- 2-19 |
| 400209 | " | HOLMES, A. W. | d. of d. | 11-12-15 |
| 527909 | " | HOLWICK, W. Q. | k. in a. | 28- 4-18 |
| 524777 | " | HONEYMAN, R. | k. in a. | 2- 9-18 |
| 2208403 | A/Sgt. | HOPE, P. D. | d. of d. | 17-12-18 |
| 523521 | Pte. | HOPEWELL, A. W. | d. of d. | 11- 8-17 |
| 49429 | " | HORTON, E. | k. in a. | 17- 9-16 |
| 530129 | " | HORWELL, G. | k. in a. | 19- 5-18 |
| 406310 | " | HOSKINS, C. H. | d., e.a. | 27- 6-18 |
| 844585 | " | HOUGHTON, H. J. | k. in a. | 2- 9-18 |
| 406908 | " | HOUGHTON, W. | k. in a. | 20- 5-18 |
| 406007 | Sgt. | HOWE, R. S. | d. of d. | 27- 3-19 |

OTHER RANKS—KILLED IN ACTION OR DIED WHILE SERVING
*—Continued*

| Regt. No. | Rank | Name | Nature of Casualty | Date |
|---|---|---|---|---|
| 823556 | Pte. | HOWELL, P. V. G. | d. of d. | 12- 3-18 |
| 2020 | " | HOYLE, J. G. R. | d. of w. | 4-10-18 |
| 532267 | " | HUGHES, W. J. | d. of w. | 14- 4-18 |
| 33083 | " | HUMBLE, T. | d. of w. | 19- 4-16 |
| 524630 | A/S/Sgt. | HUTCHINGS, S. R. | d. of d. | 9- 4-18 |
| 528560 | Pte. | ISAAC, J. H. | d. of d. | 22- 4-19 |
| 6815 | " | ISAAC, S. | d., e.a. | 27- 6-18 |
| 697061 | " | INOUYE, H. | k. in a. | 19- 5-18 |
| 34147 | " | IVERS, J. | d. of d. | 29-11-14 |
| 33653 | Cpl. | JACKSON, W. | d., e.a. | 27- 6-18 |
| 2026 | Pte. | JAMES, R. H. | d. of d. | 27-11-18 |
| 35449 | " | JAMES, W. L. | d., e.a. | 27- 6-18 |
| 34419 | Cpl. | JARDINE, G. | k. in a. | 19- 5-18 |
| 2476302 | Pte. | JARVIS, N. | k. in a. | 29- 9-18 |
| 261349 | " | JEFFS, W. J. | k. in a. | 19- 5-18 |
| 2027 | " | JENKINS, A. | d. of w. | 6- 8-16 |
| 2109981 | " | JENSEN, J. A. | k. in a. | 4-10-18 |
| 531668 | " | JOHNSON, W. A. | d. of w. | 28- 9-18 |
| 400433 | A/Sgt. | JOHNSTONE, A. V. | drowned | 16- 6-17 |
| 523632 | Pte. | JOHNSTONE, C. | d. of w. | 26- 5-18 |
| 1669 | " | JONES, C. C. | k. in a. | 12-11-17 |
| 525027 | " | JONES, R. M. | k. in a. | 11-10-17 |
| 523840 | " | JONES, W. G. | d. of w. | 4- 4-18 |
| 192249 | " | JOYCE, J. | d. of d. | 30-10-18 |
| 529584 | " | KANE, A. O. | d. of w. | 21- 4-17 |
| 461093 | " | KELLY, A. | d. of d. | 13-10-17 |
| 195880 | " | KELLY, R. C. | d., e.a. | 27- 6-18 |
| 50606 | " | KENNEDY, N. F. | k. in a. | 8- 8-18 |
| 532666 | " | KENNEDY, W. McL. | d. of d. | 8- 3-17 |
| 400132 | S/Sgt. | KIRKWOOD, C. W. | d. of w. | 2-10-18 |
| 33680 | Pte. | KILPATRICK, S. A. | k. in a. | 27- 9-18 |
| 528060 | " | KING, G. | k. in a. | 1-10-18 |
| 523770 | " | KIPPING, S. W. | d. of w. | 12-11-17 |
| 642066 | " | KNIGHT, C. H. | d. of d. | 10- 7-17 |
| 02505 | " | KNOWLES, H. | k. in a. | 3-11-17 |
| 32917 | " | LACOURSE, L. D. | d. of w. | 17- 6-16 |
| 527596 | " | LAFLIN, F. | k. in a. | 26- 8-18 |
| 26467 | Cpl. | LACERTE, W. | d. of d. | 14-11-18 |
| 520013 | Sgt. | LALANDE, A. | d. of d. | 12- 5-17 |
| 33101 | Pte. | LAMONTE, W. S. G. | d. of w. | 12- 6-17 |
| 33383 | Sgt. | LANDSTROM, G. A. | k. in a. | 9-10-16 |
| 400071 | " | LANG, W. | d. of d. | 24- 2-16 |
| 204036 | Pte. | LANGDON, H. J. | d. of d. | 29-12-18 |
| 523047 | " | LANGFORD, A. M. | k. in a. | 15- 8-17 |
| 808977 | " | LANHAM, A. H. L. | d. of d. | 12- 5-17 |
| 47369 | " | LAWTON, A. E. | d. of w. | 11-11-15 |
| 32977 | " | LeCAIN, J. M. | d. of d. | 12- 2-19 |
| 192260 | " | LECKIE, A. | k. in a. | 1-10-16 |
| 526736 | " | LEGGET, J. | k. in a. | 29- 8-18 |
| 152833 | A/Cpl. | LEPPARD, F. H. | d. of d. | 30-10-18 |
| 535984 | Pte. | LEWIS, A. J. | k. in a. | 3- 9-18 |
| 50144 | " | LEWIS, W. H. | d. of d. | 2-11-16 |

## OTHER RANKS—KILLED IN ACTION OR DIED WHILE SERVING —*Continued*

| Regt. No. | Rank | Name | Nature of Casualty | Date |
|---|---|---|---|---|
| 524947 | Pte. | LINDSAY, J. | k. in a. | 6-11-17 |
| 214 | Sgt. | LLOYD, A. E. | d. of w. | 30- 5-18 |
| 526750 | Pte. | LOCKE, J. R. | d. of w. | 30- 9-18 |
| 33389 | " | LOCKERY, J. D. | acc. killed | 27- 2-17 |
| 51047 | " | LOFTIN, J. M. | acc. killed | 28-12-16 |
| 524554 | " | LOGAN, E. E. | d. of d. | 16-12-17 |
| 192129 | " | LONG, A. W. | d. of d. | 19- 1-19 |
| 523640 | " | LOVATT, C. W. | k. in a. | 29-10-17 |
| 524787 | " | LUCAS, J. | k. in a. | 14-11-16 |
| 1679 | L/Cpl. | LUMSDEN, J. G. | k. in a. | 9- 5-16 |
| 33390 | Pte. | LYTTLE, C. W. | d. of w. | 23- 5-15 |
| 523243 | " | MACDONALD, A. W. | d. of d. | 29-12-16 |
| 523017 | " | MacDONNELL, S. J. | k. in a. | 19- 5-18 |
| 34491 | Cpl. | MacKAY, A. V. | k. in a. | 19- 5-18 |
| 1078442 | Pte. | MacKENZIE, A. | k. in a. | 19- 5-18 |
| 50423 | Cpl. | MacKENZIE, J. | k. in a. | 28- 6-16 |
| 526544 | Pte. | MacKENZIE, W. | k. in a. | 12- 5-18 |
| 51049 | " | MacLENNAN, K. F. | d. of w. | 23- 9-16 |
| 534470 | Sgt. | MacMILLAN, H. G. | d. of w. | 19- 5-18 |
| 9473 | Pte. | MacMURCHY, W. C. | d. of d. | 16- 2-18 |
| 526674 | " | McANALLY, F. L. | d., e.a. | 27- 6-18 |
| 532302 | " | McBETH, P. | k. in a. | 3- 9-18 |
| 535463 | Cpl. | McCAIG, E. C. | d. of w. | 31- 5-18 |
| 526546 | Pte. | McCORMACK, L. P. | d. of d. | 31- 5-16 |
| 651808 | " | McCORMACK, W. | d. of w. | 27- 4-17 |
| 529615 | " | McCOY, A. E. | k. in a. | 14-11-17 |
| 524556 | " | McDIARMID, F. H. | d. of w. | 7-11-17 |
| 2098858 | " | McDONALD, L. H. | d., e.a. | 27- 6-18 |
| 1345 | " | McDONALD, T. W. | d. of d. | 9-12-18 |
| 529617 | " | McFADDEN, J. H. | k. in a. | 16- 9-16 |
| 1695 | " | McFARLANE, W. | d. of w. | 16- 9-16 |
| 34413 | Sgt. | McGREGOR, C. S. | d. of d. | 18-12-17 |
| 530645 | Pte. | McGURTY, J. | k. in a. | 22- 5-16 |
| 211141 | " | McKAY, C. G. | k. in a. | 19- 5-18 |
| 32979 | Sgt. | McKAY, J. W. | d. of w. | 24- 4-15 |
| 534245 | Pte. | McLACHLAN, J. | k. in a. | 15- 8-18 |
| 33662 | " | McLONNEY, W. | k. in a. | 29- 8-18 |
| 59734 | " | McMACKEN, T. | d. of d. | 3-12-18 |
| 33399 | Cpl. | McMASTER, G. E. | acc. killed | 19- 8-18 |
| 50853 | Pte. | McMEEKIN, F. | k. in a. | 27- 9-16 |
| 32855 | " | McNUTT, W. M. | d. of w. | 1-10 16 |
| 536277 | " | McPHERSON, E. M. | d., e.a. | 27- 6 18 |
| 71185 | " | McSLOY, B. | d. of w. | 8-11-18 |
| 528033 | " | MALLOUGH, I. C. | k. in a. | 14-11-17 |
| 2114805 | " | MALONEY, E. A. | k. in a. | 8- 8-18 |
| 232 | " | MARCUS, D. | d. of w. | 6-11-17 |
| 449169 | " | MARTEL, C. | d. of w. | 26-10-18 |
| 32801 | " | MARTIN, E. | d. of w. | 24- 5-18 |
| 529597 | Cpl. | MARTIN, J. | k. in a. | 2- 6-16 |
| 521 | Pte. | MARTIN, M. (alias Marlieb, Max) | d. of w. | 10- 4-17 |
| 528850 | " | MASON, R. N. | d. of w. | 10- 8-18 |
| 33217 | " | MATTHEWS, C. | acc. killed | 11-12-14 |

## OTHER RANKS—KILLED IN ACTION OR DIED WHILE SERVING —*Continued*

| Regt. No. | Rank | Name | Nature of Casualty | Date |
|---|---|---|---|---|
| 523642 | Pte. | MAY, W. J. | k. in a. | 3- 1-17 |
| 33126 | " | MEADS, G. | d. of d. | 27-12-14 |
| 847424 | " | MENARD, A. | k. in a. | 19- 5-18 |
| 02889 | " | MENNEL, H. V. | d. of d. | 21- 2-19 |
| 528727 | " | METCALF, F. | k., e.a. | 30- 5-18 |
| 1363 | " | MILDENHALL, E. J. | k. in a. | 19- 9-16 |
| 875015 | " | MILNE, W. | d. of d. | 2- 1-19 |
| 523345 | " | MINCHIN, F. H. | d. of w. | 30- 5-18 |
| 541402 | " | MITCHELL, C. F. | k. in a. | 19- 5-18 |
| 32888 | " | MITCHELL, J. | k. in a. | 8- 8-18 |
| 1691 | " | MITCHELL, R. A. | k. in a. | 15- 9-16 |
| 529605 | " | MOORE, J. E. | d., e.a. | 27- 6-18 |
| 528849 | " | MORRIS, F. M. | d. of w. | 4- 9-18 |
| 33417 | " | MORRIS, S. C. | acc. killed | 29- 7-16 |
| 69584 | " | MORRISON, J. S. | k. in a. | 26- 6-18 |
| 408975 | " | MOYER, P. | k. in a. | 6-11-17 |
| 528898 | " | MULLIGAN, G. V. | d. of w. | 18-11-17 |
| 33116 | " | MURCOTT, A. | k. in a. | 17- 4-16 |
| 33117 | " | MURPHY, G. | k. in a. | 13- 6-16 |
| 859392 | " | MURRAY, A. | acc. killed | 22-10-18 |
| 531762 | " | MURRAY, C. S. | k. in a. | 26- 6-17 |
| 11271 | " | MURRAY, E. | k. in a. | 9- 8-18 |
| 33659 | " | MURRAY, F. J. | d. of d. | 17- 8-15 |
| 526600 | " | MURRAY, J. | d., e.a. | 27- 6-18 |
| 644511 | " | NASH, G. E. | d., e.a. | 27- 6-18 |
| 33141 | " | NEAL, J. | k. in a. | 17- 4-16 |
| 532317 | " | NEIL, R. C. | k. in a. | 3- 9-18 |
| 1374 | " | NICHOL, W. | k. in a. | 3- 7-16 |
| 1703 | " | NICHOLLS, J. J. | d. of w. | 12-10-18 |
| 1704 | " | NICHOLSON, A. G. | k. in a. | 16- 9-16 |
| 536262 | " | NICKSON, T. V. G. | k. in a. | 1-10-18 |
| 34507 | " | O'BRIEN, W. | k. in a. | 15- 8-17 |
| 26235 | " | ODESSKY, M. G. | k. in a. | 6-11-17 |
| 435843 | " | OLIVER, L. G. | k. in a. | 15- 8-18 |
| 213383 | " | O'NEIL, N. R. | d., e.a. | 27- 6-18 |
| 213382 | " | O'NEIL, R. | d., e.a. | 27- 6-18 |
| 159592 | " | O'NEILL, H. V. | k. in a. | 19- 5-18 |
| 33146 | Cpl. | ORGILL, J. | k. in a. | 3-11-17 |
| 159 | Q.M.S. | ORR, R. L. | d of d. | 29-11-18 |
| 108446 | Pte. | OXLEY, E. T. | d. of w. | 20- 5-18 |
| 1712 | " | PARKER, A. | k. in a. | 16- 9-16 |
| 33218 | " | PARKINSON, H. | k. in a. | 19- 5-18 |
| 400303 | " | PARSONS, G. | k. in a. | 19- 5-18 |
| 467562 | " | PATEMAN, J. C. | d., e.a. | 27- 6-18 |
| 532751 | " | PATERSON, G. W. | d. of w. | 28-10-16 |
| 32739 | " | PATON, D. | d. of w. | 1-10-16 |
| 530035 | " | PATTON, D. | k. in a. | 30- 9-18 |
| 81693 | " | PATTON, H. | d., e.a. | 27- 6-18 |
| 400450 | " | PEARSE, A. E. | d. of d. | 3-12-15 |
| 1715 | " | PENDER, T. P. | k. in a. | 16- 9-16 |
| 524358 | " | PENFOLD, P. | d. of w. | 3-10-18 |
| 1382 | " | PEPPER, H. | d. of w. | 29- 9-16 |

## OTHER RANKS—KILLED IN ACTION OR DIED WHILE SERVING —*Continued*

| Regt. No. | Rank | Name | Nature of Casualty | Date |
|---|---|---|---|---|
| 536039 | Pte. | PERRIN, L. | d. of d. | 27- 9-17 |
| 527287 | " | PETTES, J. C. | k. in a. | 20- 5-18 |
| 249385 | " | PHELPS, J. S. | d. of d. | 10- 2-19 |
| 536200 | " | PILLSBURY, F. H. | d. of d. | 17- 4-17 |
| 2005910 | " | PINCO, M. W. | k. in a. | 19- 5-18 |
| 628138 | " | PITMAN, H. J. | d. of d. | 25-11-18 |
| 33152 | " | PITTS, C. L. | d. of w. | 25- 4-15 |
| 1716 | " | PLOWRIGHT, W. N. | k. in a. | 29- 4-17 |
| 1390 | " | POLLARD, F. D. | d., e.a. | 27- 6-18 |
| 532744 | Cpl. | POXON, S. | k. in a. | 26-10-17 |
| 525545 | Pte. | PORTER, J. | d., e.a. | 27- 6-18 |
| 527764 | " | POTTER, W. | d. of d. | 25-10-18 |
| 34520 | " | PRATT, J. W. | d. of w. | 27-10-18 |
| 1393 | " | PRICE, J. H. | d. of w. | 7-11-17 |
| 523380 | " | PRINGLE, W. R. | k. in a. | 29- 9-18 |
| 33865 | " | PROCTOR, J. D. | k. in a. | 17- 4-16 |
| 50089 | " | PURCELL, J. A. | d., e.a. | 27- 6-18 |
| 89981 | " | QUINN, M. J. | d. of d. | 5- 5-16 |
| 526586 | " | RADCLIFFE, J. J. | d. of w. | 23- 5-18 |
| 525012 | " | REDMOND, W. B. | k. in a. | 8-11-17 |
| 527641 | " | REEVES, A. E. | d. of w. | 28- 9-18 |
| 524579 | " | RENYARD, A. | d., e.a. | 27- 6-18 |
| 523324 | " | RICHARDS, P. | d., e.a. | 27- 6-18 |
| 527149 | " | RICHARDSON, J. L. | d. of w. | 20- 5-18 |
| 2476485 | " | ROBERTS, G. W. | k. in a. | 19- 5-18 |
| 135833 | A/Cpl. | ROBINSON, W. D. | d. of d. | 27- 1-19 |
| 1729 | Pte. | ROE, A. C. | d. of w. | 23- 4-17 |
| 33616 | Cpl. | ROGERS, G. | k. in a. | 13- 6-17 |
| 525169 | Pte. | ROGERS, J. | d., e.a. | 27- 6-18 |
| 520202 | " | RONDEAU, E. | d. of d. | 24- 4-18 |
| 32744 | " | ROSE, G. W. | d. of d. | 4- 2-19 |
| 910940 | " | ROSEBORO, K. | d., e.a. | 27- 6-18 |
| 928 | Q.M.S. | ROSS, A. | d. of d. | 19- 2-19 |
| 527359 | Pte. | ROY, G. A. | d. of w. | 1-11-18 |
| 530072 | " | ROY, G. H. | d. of w. | 13-10-16 |
| 34437 | " | RYAN, T. | k. in a. | 3- 9-16 |
| 527379 | " | RYEA, F. R. R. | k. in a. | 19- 5-18 |
| 536477 | " | SACRE, W. B. | d., e.a. | 27- 6-18 |
| 536215 | " | SAMUEL, A. | d. of d. | 16-11-18 |
| 644708 | " | SANDERS, V. | d., e.a. | 27- 6-18 |
| 527999 | " | SANDERS, W. H. | d., e.a. | 27- 6-18 |
| 536403 | " | SANDERSON, R. A. | d., e.a. | 27- 6-18 |
| 862726 | " | SAYYAE, F. J. | d., e.a. | 27- 6-18 |
| 602745 | " | SCANLAN, E. | k. in a. | 19- 5-18 |
| 536249 | " | SCRIBNER, C. G. | d., e.a. | 27- 6-18 |
| 530613 | " | SELWAY, H. J. | k. in a. | 30-10-17 |
| 527648 | Cpl. | SELWOOD, W. G. | d. of w. | 30- 5-18 |
| 34529 | Pte. | SETTERSTROM, E. | d. of w. | 20- 5-18 |
| 532229 | " | SEUME, H. T. | k. in a. | 20-11-16 |
| 527293 | " | SHAVER, H. C. | k. in a. | 19- 5-18 |
| 1408 | " | SHERRATT, G. A. | d. of w. | 5- 4-18 |
| 524307 | " | SHIPMAN, L. | d., e.a. | 27- 6-18 |
| 2098872 | " | SIME, J. | k. in a. | 19- 5-18 |
| 34534 | " | SKINNER, A. | k. in a. | 19- 5-18 |

OTHER RANKS—KILLED IN ACTION OR DIED WHILE SERVING
*—Continued*

| Regt. No. | Rank | Name | Nature of Casualty | Date |
|---|---|---|---|---|
| 532293 | Pte. | SMALL, W. W. | k. in a. | 21-10-16 |
| 33455 | " | SMART, W. T. | d. of w. | 28- 4-15 |
| 527654 | " | SMITH, E. C. | d., e.a. | 27- 6-18 |
| 532378 | " | SMITH, H. | d. of w. | 16- 8-18 |
| 420903 | " | SMITH, J. | d. of d. | 31-10-18 |
| 523543 | " | SMITH, J. T. | k. in a. | 3-11-17 |
| 50837 | Sgt. | SMITH, M. | k. in a. | 19- 5-18 |
| 1415 | Pte. | SMITH, R. H. | d. of w. | 19-10-16 |
| 03676 | " | SMUCK, D. R. | d., e.a. | 27- 6-18 |
| 556014 | " | SMYTH, E. D. | d. of w. | 20- 5-18 |
| 50674 | " | SOLVANDER, E. H. | k. in a. | 24- 3-17 |
| 536315 | " | SPITTAL, J. | d., e.a. | 27- 6-18 |
| 1759 | " | STAGG, C. | k. in a. | 9- 4-17 |
| 522814 | " | STANLEY, W. | d. of w. | 13-10-18 |
| 439815 | A/Sgt. | STANWORTH, T. | d. of d. | 9- 3-19 |
| 400459 | Pte. | STAPLES, F. | k. in a. | 28- 9-18 |
| 530157 | " | STARKEY, E. | k. in a. | 30-10-17 |
| 530087 | Sgt. | STEEL, F. | k. in a. | 27-10-17 |
| 1422 | Pte. | STEELE, P. | k. in a. | 15- 9-16 |
| 400171 | " | STEEN, R. A. | d., e.a. | 27- 6-18 |
| 2126 | " | STEVENSON, J. | d. of d. | 26-11-18 |
| 322936 | " | STEWART, C. H. | k. in a. | 3-11-17 |
| 155069 | " | STEWART, D. | k. in a. | 26-10-17 |
| 527805 | " | STEWART, W. | d. of d. | 24-11-18 |
| 527270 | " | ST. GERMAIN, E. | d. of w. | 20- 5-18 |
| 529659 | " | STREAT, S. | k. in a. | 26- 8-18 |
| 180749 | A/L/Cpl. | STUTCHBURY, C. J. | d. of d. | 12- 5-19 |
| 469934 | Pte. | SULLIVAN, J. A. | d. of d. | 8-12-17 |
| 51098 | " | SUTHERLAND, H. | d., e.a. | 27- 6-18 |
| 536396 | " | SVIESHNIKOFF, I. | d. of w. | 16- 8-17 |
| 532184 | " | SWEENEY, C. | d. of w. | 1-11-17 |
| 522816 | " | SYER, A. E. | d. of w. | 5- 5-17 |
| 532359 | Sgt. | TAIT, J. | d. of w. | 18- 9-18 |
| 895548 | Pte. | TAKAYANAGI, T. | d. of w. | 20- 5-18 |
| 33188 | " | TAYLOR, R. | k. in a. | 14- 4-16 |
| 157067 | Sgt. | TAYLOR, W. J. | d. of w. | 19- 5-18 |
| 526811 | Pte. | TEDMAN, C. S. | k. in a. | 29- 8-18 |
| 33467 | Cpl. | THOMPSON, W. R. | k. in a. | 27- 9-18 |
| 526702 | Pte. | THURSTON, H. | d. of w. | 6-11-17 |
| 33189 | " | TORRANCE, W. A. | k. in a. | 14- 4-16 |
| 33469 | L/Cpl. | TOWLE, S. | d. of w. | 16- 8-17 |
| 523191 | Pte. | TOWNEND, J. | d. of w. | 18-11-17 |
| 536034 | " | TOWNSEND, E. J. | d. of w. | 20- 7-18 |
| 2139 | L/Cpl. | TRANTER, S. | k. in a. | 3- 7-17 |
| 623034 | Pte. | TREACY, W. J. | d. of d. | 2-12-18 |
| 525553 | " | TREVENEN, J. S. | d. of w. | 24- 4-18 |
| 406836 | " | TROUGHTON, F. | k. in a. | 19- 5-18 |
| 2476369 | " | TURNBULL, W. | d. of d. | 18- 9-17 |
| 466903 | " | TURNER, T. | d. of d. | 13-10-16 |
| 531697 | " | TURNER, W. S. | k. in a. | 27- 9-18 |
| 1823 | A/R.S.M. | TYTHERIDGE, A. B. | acc. killed | 18- 5-19 |
| 523052 | Pte. | UNDERWOOD, P. W. | k. in a. | 16-11-17 |
| 19788 | " | VALENTINE, W. R. | d. of d. | 27- 3-16 |
| 41184 | " | VEY, T. J. | d. of d. | 15-11-18 |

## OTHER RANKS—KILLED IN ACTION OR DIED WHILE SERVING —*Concluded*

| Regt. No. | Rank | Name | Nature of Casualty | Date |
|---|---|---|---|---|
| 34548 | Pte. | VIEN, O. | d. of w. | 20- 5-18 |
| 524363 | " | WAGNER, F. | d. of w. | 26- 8-18 |
| 234 | Sgt. | WALLACE, R. G. | d. of w. | 30- 5-18 |
| 526645 | Pte. | WALSH, O. S. | d. of w. | 29- 8-18 |
| 156 | S.M. | WARD, C. H. | d. of w. | 30- 5-18 |
| 530083 | Q.M.S. | WARREN, B. H. | d. of w. | 28- 8-18 |
| 1783 | Sgt. | WARTMAN, A. F. | d. of w. | 16-10-16 |
| 742206 | Pte. | WATTERS, J. W. | d. of w. | 22- 4-18 |
| 32973 | S.M. | WATTS, F. T. | d. of w. | 30-12-18 |
| 400467 | Pte. | WEATHERHEAD, J. C. | d. of w. | 27- 3-18 |
| 1097 | " | WEBB, J. H. | d. of d. | 31- 7-18 |
| 126600 | Cpl. | WHEATLEY, W. J. | d. of d. | 3- 3-19 |
| 523687 | Pte. | WHEELER, B. | d. of d. | 18-11-16 |
| 715056 | A/Cpl. | WHITEHEAD, F. E. | d. of d. | 12-10-18 |
| 400470 | Pte. | WHITEWAY, S. J. | k. in a. | 3-11-17 |
| 526567 | " | WHITTAKER, J. W. | d. of w. | 16-11-17 |
| 155 | Sgt. | WILEY, G. | d. of w. | 30- 5-18 |
| 766311 | Pte. | WILKINSON, W. | d. of d. | 6- 2-19 |
| 536236 | " | WILLIAMS, F. C. | d., e.a. | 27- 6-18 |
| 536063 | " | WILLIAMS, R. | d., e.a. | 27- 6-18 |
| 1449 | Sgt. | WILLIAMSON, W. A. | d. of w. | 30- 4-17 |
| 529063 | Pte. | WILLIS, H. F. | d. of d. | 26- 9-17 |
| 527674 | " | WILSON, A. | d., e.a. | 27- 6-18 |
| 436204 | " | WILSON, H. | k. in a. | 19- 5-18 |
| 1450 | L/Cpl. | WILSON, M. W. | k. in a. | 9-11-18 |
| 523772 | Pte. | WILSON, W. | d. of w. | 29- 8-17 |
| 534497 | " | WITHROW, J. J. | d. of d. | 10-11-18 |
| 460654 | Sgt. | WITTY, R. W. | d. of w. | 1- 9-18 |
| 523691 | Pte. | WOODS, E. H. | d. of d. | 10- 4-18 |
| 536444 | " | WORDEN, W. | k. in a. | 19- 5-16 |
| 400394 | " | WRAY, R. | d. of w. | 28- 9-18 |
| 33493 | " | WRIGHT, M. | k. in a. | 11- 5-16 |
| 523764 | " | YEOMANS, G. M. | d. of d. | 23- 1-19 |

### DENTAL CORPS

| | | | | |
|---|---|---|---|---|
| 548 | Pte. | ADAMSON, J. H. | d. of d. | 28- 2-18 |
| 522510 | " | BROWN, G. | d. of d. | 17- 1-18 |
| 324 | " | CONRAD, W. H. | d. of d. | 1- 5-18 |
| 535615 | Sgt. | FLEMING, W. T. | d. of d. | 12- 9-16 |
| 1123 | Pte. | FRASER, P. G. | d. of d. | 23-11-18 |
| 531104 | Sgt. | HODGKINSON, A. V. | d. of d. | 25- 3-16 |
| 522545 | Pte. | LAIDLAW, F. W. | d., e.a. | 19- 5-18 |
| 522533 | Sgt. | PATTINSON, F. O. | d., e.a. | 30- 5-18 |
| 82 | Pte. | SEDGER, C. G. | d. of d. | 4-12-15 |
| 442 | Sgt. | SMITH, L. S. | d. of d. | 26-11-17 |

### ABBREVIATIONS

k. in a.—Killed in Action.
d. of w.—Died of Wounds.
d., e.a.—Drowned, Enemy Action (*Llandovery Castle*)
d. of d.—Died of Disease.
acc. killed—Accidentally Killed.
k., e.a.—Killed, Enemy Aircraft.

83635—25½R

## CHAPTER XXVII

### FROM AMIENS TO THE RHINE

The Canadian Corps was at its best in 1918, all cadres of the four divisions full. The 5th Division was never completed. The reason was simple yet profound. The Corps Commander, Lieut.-General Sir A. W. Currie, preferred reality to appearance. And yet at many times during the war appearance was compelled to do duty for reality. On September 28, 1914, when the Germans failed in their attempt on the line of the Somme and opened the attack on Antwerp, it was Joffre's policy to turn or envelop their right flank, or failing that to form a junction with the Belgian army. The 6th French Army had appeared unexpectedly on the Ourcq, and the new French army in process of formation under Foch, in reality the 7th, was officially described as the 9th. The enemy was bound to act as if this army and also the 8th had a real existence.[1] These are the ruses of war.

Early in the year 1918, the supply of British recruits was exhausted. In December of the previous year 700,000 fresh troops were demanded to meet the German attack which was then impending; but not more than 300,000 were in sight. That moment was described by Lord Milner as the darkest in the history of the Empire since the day of the Armada. To keep up the appearance of strength the number of British divisions was left intact, but the size of the formation was diminished by reducing the battalions in a brigade from four to three. A similar policy

was recommended for the Canadian Corps, by which a fifth division could be formed from the surplus and from reinforcing troops then in England. The result would be a Canadian army of two corps.

Praise so lavish and so undiscriminating has been bestowed upon the Canadian Corps that its real excellence is yet unknown. Persons with knowledge remained silent lest they might appear to swell the fulsome chorus and do further injustice to other corps engaged. The Canadian Corps was in 1918 the most formidable weapon in the hand of Sir Douglas Haig. It was of the right size and weight, strong yet flexible, heavy but swift. General Currie was determined to keep it so. He had made the important discovery that forty bayonets is at all times the correct complement of a platoon, no more, no less; that four platoons form a company; and four companies a battalion with 640 consequent bayonets. Deduction may be made of four men from each platoon, in the Lewis gun sections, who were armed with revolvers only. He had at the time 48 battalions, and required 30,720 bayonets, or with bayonets in the hands of sergeants and sergeant-majors a total of 31,680. In addition he had four battalions of pioneers and 12 field companies of engineers who were all armed and trained to the infantry pattern. The general base at Etaples for all reinforcing troops was kept filled, with the result that the formations were always up to strength. For these he could well dispense with the 341 officers which a new division would demand, and the army and corps staffs that would have had to be created.

The Canadian Corps had come to be in the old technical military sense " a forlorn," that is, an armed force fit and ready for any adventure that was exceptionally perilous or desperate. This was the understanding of all subordinate commanders. The Canadian Corps after years of

continual warfare had developed a mind of its own. It was something more than a part of the British army; to the extent of its vitality it was the British army, engrafted into the fabric, giving as well as receiving. The officers were determined that their precious experience should not go for naught when they were called into council. The generals were not deterred by false modesty; they discussed without reticence; they were definite in opinion, firm in decision. Who had seen more than they. General Currie within the bounds of military discipline on at least three important occasions declined to engage in operations until he himself had laid the preliminary plans for success; he had won the complete confidence of Sir Douglas Haig, and secure in that confidence he was free to demand full scope for his own genius in war. The resolute stand against the conduct of the staff of the XVII Corps at Cologne would have been impossible in the early years of the war. Such an organization was not to be altered; and the troops proposed for a fifth division were, after bitter controversy in London, employed for reinforcing those already in existence. The Canadian Corps was willingly on their part, and lovingly on his, in the hand of Sir Douglas Haig.

The first business of the new Overseas Minister in 1917 was to prepare for the War Office a philosophical essay on the relation of the Canadian Corps to the other Imperial forces. In form and temper it was admirable. The War Office agreed with polite amiability to the principles set forth, but suggested a conference for a more full understanding. The main thesis was the "entity" of the corps, and the dogma was laid down that the Canadian Government had "in no respect abrogated its unquestionable right to control and administer its own forces." Other words of scholastic excellence were: "plenary powers,"

" sole and complete," " final authority," and " right to proceed at will." This formidable language would stand every test that might be applied in any parliament or on any hustings. In the field it did no harm. " Political control " was retained; " military control " was awarded to the Commander-in-Chief.

The truth is that Sir George Perley, Sir Edward Kemp, Sir Robert Borden, Sir R. E. W. Turner, Sir Arthur Currie, and the soldiers at the War Office were men of sense and of mutual good-will, and the war did not last long enough for a full discussion of the political doctrine so lucidly set forth. The last of the correspondence is dated July 10, 1918. But it requires small skill in dialectics to discover that whilst the Minister had " an undoubted responsibility to the people of Canada " the troops had none whatever. They were soldiers of the King from the moment their attestation papers were signed. In the exercise of that authority which the Government reserved to itself, the troops might conceivably be ordered to disband upon the field; it would remain with the soldiers themselves to decide whether or not they would commit an act of mutiny in fulfilment of an anterior act of treason. The figment of a Canadian section at General Headquarters must have been a mere conscious self deception. It was even likened to a post office in which the postmaster retains a certain discretion as to what matter he will transmit. And yet it might be well to consider such anomalies before the next war comes.

At a point so near the end it is proper to observe that nothing could be more complete or better ordered than the records from which the present history is drawn. One example will serve. For the period from August 1, during which the Corps broke through at Amiens, returned to Arras, turned the Hindenburg line, captured Cambrai, and

forced through Denain, Valenciennes, and Mons, on the way to the Rhine, Colonel A. E. Snell, medical director of the 3rd Division and afterwards of the Corps, collected all the records and embodied the result of his study in final form on a file which if reproduced in detail would require three hundred printed pages. Major R. M. Gorssline never failed to supply the minutest documentary evidence pertaining to the service. Many of the memoranda written by Colonel A. F. Duguid upon the larger operations of the Corps have been incorporated almost in their entirety. The Chief of the General Staff was final in counsel and in wisdom profound. Where documents were incomplete, obscure, ambiguous, or at variance, officers with personal knowledge of the events were always found willing and able to solve the perplexity. What they said was often more precious than they knew, for a casual remark would illumine a whole series of incidents.

After the battle of Passchendaele the Canadian Corps returned to hold the line east of Vimy Ridge and west of Lens. During the winter the normal dispositions were: in the line three divisions; in reserve resting and training one division. Much of the time was spent in strengthening the defences of the Ridge and carrying out in several arms and services reorganization induced by the lessons of recent fighting. The medical units having been found fit to meet every test continued unchanged, and during the period operated by the customary method. For the four months the normal casualty of divisions in the line was somewhat less than 1,000 per month, of which more than half were sick. Advanced dressing stations were at Vimy, La Chaudière, La Coulotte, Fosse 6, Liévin, Cité St. Pierre, and Loos; main dressing stations were at Aux Rietz, Souchez, and Fosse 10 de Lens. Divisional rest stations were for the right at Grand Servins, and for the left

at Fosse 10. The Corps collecting station for sick was at Les Brebis, the Corps rest station at Fresnicourt. Evacuation was made to casualty clearing stations at Ruitz, Lozinghem, and Bruay; serious cases being sent to the nearest in the first available car. About this time British infantry brigades were reduced to three battalions, so that a Canadian field ambulance had to provide for the sick and wounded of 3,400 infantrymen, whilst a British field ambulance with the same establishment served 2,600; and the difference became still greater after the increase in Canadian engineers and machine gunners.

When the German offensive opened on March 21, 1918, a change in disposition was promptly made. The front of the Corps was extended to release British troops; the 1st Division was withdrawn behind the Ridge and became First Army Reserve; the 2nd becoming general reserve was hurriedly moved to the southwest of Arras. For a week the divisions watched and waited. Then the German blow was delivered astride the Scarpe on the 28th, just as the 1st Division was on the road to the south where the enemy had penetrated deeply. To meet this new attack the division was sent back to the west of Arras, and placed at the disposal of the XVII Corps, then in line across the Cambrai road.

At such a time medical arrangements, if any, must be tentative and alternative, for it could not be foreseen when or where the troops might be engaged. The enemy was pressing hard on Arras. Monchy le Preux had been abandoned by the XVII Corps. It was apparent that Arras was to be evacuated. The inhabitants were moving out; even the military police were gone, and the water keys could not be found. With the enemy in Arras, the two Canadian divisions still in the Corps might well be swept from the crest of the Ridge, although, as if

anticipating some such emergency, early in March defence of the right flank was begun.[2] The bed of the Scarpe was wired and preparation made to inundate the banks; trenches were dug east and west parallel with the river in the direction of Roclincourt; switch lines were constructed; and on the 28th a composite brigade of the 4th Division was made instantly ready at the southern end of the Ridge.

A conference of the XVII Corps was called at Agnez les Duisans four days later, there being present the commanders of the 4th (British) and 15th (Scottish) Divisions, three officers of the staff, and General Archibald Cameron Macdonell commanding the 1st Division. The commander of the XVII Corps announced that if the enemy gained Observation Ridge, that is, the high ground north of Tilloy and southeast of Arras, he would retire to lines previously projected west of the town. General Macdonell had arrived late, and was therefore in a position to assume that he misunderstood the magnitude and finality of such a decision. He declared that Arras was actually in Canadian hands, that he had previously examined the position which had been so gallantly held for two years, and that so far as he was concerned as commander of the 1st Division he had no intention of retiring. General Macdonell never was reticent about the prowess of his division, and was heard by one present to affirm that he would continue to hold the position with his Old Red Patches alone. Arras was not abandoned. Telegraph Hill and Tilloy were taken over, and for a month all four divisions remained in the line.

Early in May the Corps, then consisting of the 1st, 3rd, and 4th, Divisions, was withdrawn into general reserve to rest and train until required; the 2nd Division remaining for three months in the line under the VI Corps. Late in the summer the Canadian Corps again held the

Arras front for two weeks, and moved from there at the end of July to begin the battle of Amiens. In these confused circumstances the medical service was content to deal with conditions as they arose.

### The Battle of Amiens

Those responsible for the medical arrangements of the battle of Amiens were faced with three difficulties: the secrecy which veiled the tactics, the swiftness of the attack, the depth of penetration into the enemy's lines. Guided by the brilliancy, evanescent though it was, of General Byng's success at Cambrai in the previous year, in which secrecy was the essential element, the general staff was resolved that the battle of Amiens should be more secret still. A deliberate and successful attempt was made to deceive the enemy. Spurious messages were issued by wireless, which he could easily hear: two Canadian battalions were sent north into the Second Army area, where identifications were placed in the enemy trenches: French liaison officers were sent to Cassel to select billets for a corps which was never intended to arrive. The movement of casualty clearing stations had more than once suggested to the enemy that an attack impended, and in the present case none of these tented structures were allowed in the area chosen for the battle.

When the Canadian Corps arrived at Amiens the administrative officers were more completely informed than the officers of the Fourth Army to which they were sent, but they were not free to disclose information which had been denied by the general staff. The dilemma was painful. They could not demand medical arrangements, and could not supply themselves, without disclosing the secret tactics of the campaign. As a natural result the Fourth

Army had little time to make provision for the evacuation of the wounded in a battle of whose imminence they had been ignorant.

It was August 6 before the medical director of the Fourth Army was informed of the impending operations. The same day he began to clear all sick to the base, 4,000 in number, and on the evening of the 7th, three casualty clearing stations were empty, closed down, and ready to move. The Asylum south of Amiens was chosen as the centre of medical operations, and on the afternoon of the 8th a clearing station on its way from the French area arrived there. On August 6 the Fourth Army was being served by twelve clearing stations at Crouy, Longpré, Pernois, St. Riquier and Vignacourt, further back than usual, as a result of experience gained in the recent offensive of the enemy. On August 8 most of the surgery was done at Crouy, but at dawn next day two stations were moved forward to Vecquemont and one to Boves, positions in front of Amiens. The evacuation of wounded was regular and rapid; on August 8th, 7,643; on August 9th, 5,076; on August 10th, 4,783. During this period an advance of 10 miles was made, and the number of motor convoys was doubled to compensate for clearing stations which cannot be closed, packed and repitched in less than 36 hours. Difficulty was experienced in sending ambulance trains up to the new railheads during the operations, as directly a railhead was opened ammunition and supply trains came up in a constant stream. It was on this account that so many casualty clearing stations were opened at Vecquemont, as it was possible there to load two ambulance trains at one time.[3]

The service was reinforced by surgical teams. Of these 48 arrived between the 7th and 10th, including two from No. 1 and 4 Canadian casualty clearing stations, and the stations themselves arrived by the 10th.

In the absence of the usual detailed arrangements there was at various times and in different places congestion of the wounded, and much was done by Canadian administrative officers to meet local needs by direct methods. One gave to the officer commanding a motor convoy on its way from the Rheims front to Fourth Army headquarters informal orders to proceed direct to the Asylum. Colonel Ross and General Currie himself did everything possible to ease a difficult situation, even by personal application to the Army Commander. As was usual in such cases a Court of Inquiry was held by order of General Rawlinson, commanding the Fourth Army. It was admitted that there was lack of co-operation between the general staff and the medical services; but it was explained that this in turn was largely inherent in the secrecy which veiled the preparation for the battle, and that secrecy was the condition of success.

In the medical arrangements for the battle of Amiens, the centre of operations was the Asylum situated on rising ground to the south of the town. Here were installed No. 1, 2, 8, 9, 11, 12, 13 Field Ambulances; No. 3 at Boves, No. 4 at St. Acheul, No. 5 at Amiens, No. 6 at Longeau, No. 10 at Boutillerie, No. 14 at Fresnicourt. The changes in officers commanding were: Lieut.-Colonels J. H. Wood, No. 2; R. H. Macdonald, No. 4; R. H. M. Hardisty, No. 6; Major S. Paulin, No. 11; Lieut.-Colonel W. H. K. Anderson, No. 13. The main dressing station was in the White Château near Boves for stretcher and walking cases, with eleven officers and seven tent sub-divisions. The corps medical centre was also at the Asylum where divisional rest stations were established, and many centres for special services.

The battle opened on August 8, the Canadian front being 8,500 yards in length. The general idea was that

each division should collect and evacuate from its own area to the corps main dressing station. In this battle—unlike Vimy Ridge—the medical director of the corps had complete control of evacuation by motor convoy to the casualty clearing stations; but once more there was congestion of the wounded. On the right the river Luce had to be crossed; there was only one bridge, and anticipating congestion a small medical detachment was sent over at 6.30 a.m., to establish a dressing station. The clearing of the field of the 2nd, 3rd, and 4th, Divisions was in charge of the officer commanding a field ambulance strengthened by additional bearers; with another officer in charge of transport. With the advance new collecting posts were set up, and again prisoners were of great assistance.

The difficulties from congestion of traffic were not unusual; but the advance was so rapid that by evening the main dressing station was eleven miles to the rear, and clearing went on all night. By the 10th, a general forward move of all headquarters was made; the main dressing station was already established at Bois de Gentelles, then at Maison Blanche near Beaucourt, and again advanced to the north of Le Quesnel. It was under canvas and to work at night was difficult or impossible, as any display of light attracted hostile aeroplanes. The evacuation of these stations was slow. One convoy of 50 cars was obviously not enough to deal with the cases being brought down by at least 90 divisional cars, but others soon arrived. On the 8th a casualty clearing station moved up to the Asylum where it might have been installed before the battle began. By the 20th operations were at an end, and the medical units were withdrawn. By August 26 they were in new positions east of Arras in preparation for another battle that was about to begin.

From August 8 to 20, the casualties evacuated were: Canadian officers, 350; other ranks, 7,413; of allies 96 officers and 1,922 other ranks; of prisoners 50 officers and 1,097 other ranks. To medical personnel the casualties were 2 officers killed and 3 wounded; 7 other ranks killed and 25 wounded.

### The Battle of Arras

For the battle of Arras which opened on August 26 the casualty clearing stations for stretcher cases were at Ligny St. Flochel, one for walking cases and one for special operations at Mingoval. The main dressing stations were at St. Catherines and Agnez-les-Duisans; the advanced stations at Athies, St. Sauveur, and Beaurains.

On the first morning a new station was opened in Arras, and the one at Agnez-les-Duisans was transformed into a casualty clearing station. By September 1, the stations in Arras were nine miles to the rear; next day light railways were pushed forward three miles and a collecting and loading post established for the whole front. In addition, there were collecting posts for walking wounded at St. Nicholas, Arras, and Achicourt. The convoy was No. 8 Scottish strongly reinforced, a unit which had worked with the Canadians for several years. This convoy had been adopted into the Canadian service by long association, and were willing comrades in its labour and its fame. They performed their hard task with a surety and gentleness which every Canadian wounded will always remember. Its commanding officer was Capt. F. H. Guppy, M.C., and his name is recorded with gratitude.

This phase of the battle opened at 3.00 a.m.; the original hour was four, but the medical services were not soon enough informed of the change, and it was daylight

before the bearers overtook the advance. The main action continued for three days, and the last casualties were removed at daybreak on the 29th, under rifle fire that was finally diverted by an airman who happened to be passing.

By the evening of September 1, the 1st and 4th Canadian divisions were in the line for the next day's attack. As it progressed the wounded were cleared most comfortably by the tramways, and motor vehicles were left free to follow the advance. Indeed there was complaint from other branches that their needs were being sacrificed to the evacuation by trains of the wounded. On September 4 the first French civilians began to filter through the German lines and appeared at a dressing station in Cagnicourt. This appearance was a sign of the end.

At the battle of Arras, the clearing of the forward area was carried out in much the same manner as during the battle of Amiens, although the light railway was an important factor on the new front, and there was a difference in the arrangement of dressing stations. At the beginning of the battle, each division had its own main dressing station for walking wounded, where all records were taken; on the left, for the 51st (Highland) Division, at St. Nicholas; in the centre at Arras for the 3rd Canadian Division; and on the right at Achicourt for the 2nd Canadian Division. The main dressing station for stretcher cases for the division to the north of the river Scarpe was at St. Catherines, and the one for the two Canadian divisions was at Agnez-les-Duisans where No. 10 and No. 4 Field Ambulances were in charge. The arrangement for these main dressing stations was largely by divisions, and was continued after the 1st and 4th Canadian, and the 4th British divisions went into the line. The arrangement for stretcher cases proved satisfactory, as all wounded from the divisions south of the Scarpe had ultimately to be taken into Arras to either one

of the stations where it was certain that records would be taken. In the case of walking or slightly wounded, where there was a possibility of men going back on conveyances other than medical, probably one central recording place would have been better. The facilities for clerical work at either of the forward walking wounded posts were imperfect, and although instructions were issued for men, not recorded, to be taken to the station in Arras, it would seem possible that a number of wounded went through without the divisions concerned receiving the necessary information.

A special feature was the arrangement for dressing and recording German wounded. Among the prisoners taken were several medical officers and a number of medical orderlies who were employed in caring for their own wounded. A separate room was set apart for this purpose, and much valuable time was saved, as in previous battles there was often difficulty in securing the necessary information without the assistance of an interpreter.

The main dressing stations have not yet received adequate description, and those at Arras will serve for the purpose, Colonel Snell's report being followed. The one for walking wounded was installed in a girls' school in a room 80 by 36 feet. Large timbers were carried in from wrecked buildings to provide seats for the patients. The floor was roped to separate incoming and outgoing casualties. On entering the side door wounded were directed to the right down two aisles formed by seats on either side and down the centre of the space. At the end of these three rows of seats were three tables, at each of which two clerks worked; one to record particulars concerning the patient, and the other to make out his "card and envelope," which were fastened to his jacket by an orderly. Here he might sit down, or walk back past the

ante-room into the dressing room proper, which was formed by a quadrangle of seats, the centre being occupied by tables carrying all necessary dressings. The only exit from this space led past a dressing table where anti-tetanic serum was given, and the necessary record made. From here, the patient passed into another waiting-room, provided with seats; facing this was a refreshment booth where hot drinks and food were provided. From this room, the patient walked outside, and was helped into a lorry and evacuated to the casualty clearing station. Some cases that came in walking or sitting were considered sufficiently serious to be made lying cases, and the necessary stretchers and blankets had been provided.

A dressing station demanded much clerical work, as all casualties had to be reported, and full returns compiled for the medical director of the division and for the record office at the base. An attempt was made to keep divisional units informed of their casualties. Eight clerks were on duty throughout the day and two at night. Three tables were placed in the admission room, at each of which two clerks worked, making out slips of admission and field medical cards. They were also responsible for the daily wires, giving the number of casualties for the various periods of the day, as required by divisional headquarters, and the usual daily state of admissions for the twenty-four hours. Divisional units were informed of casualties by collecting and sorting out admission slips, and forwarding them to the units concerned.

For stretcher cases a large ward in the civic hospital was secured. Trestles in pairs were set up, and each pair carried a stretcher as an operating table. At the entrance to the ward a clear space was reserved for cases until they could be placed on the trestles. At the exit there was a clear space for the disposal of cases awaiting evacuation

so allowing the trestles to be available for the next patients. As the normal ambulance load was four lying cases, provision was made for these to be dressed at the same time. Therefore a unit of four pairs of trestles was the rule. In the main room at this station there were two such units. Trestles were so spaced as to allow freedom of action to the personnel at each pair. A medical officer was in charge of one dressing table, and as soon as the case was dressed it was removed to the space at the exit and another case placed on the trestles. At times, one medical officer might dress two or three cases while another would be devoting all his attention to one case with multiple wounds or to one requiring a difficult dressing, and the stream of wounded going through was not interrupted.

Each medical officer had two dressers to assist him. The dressings were brought from side tables in large enamelled basins, each basin containing an assortment of gauze, wool, bandages, adhesive tape, and safety pins. There were two bearer squads, one at the entrance and one at the exit, for loading and unloading and for lifting cases on and off the trestles. Two clerks were placed out of the way, one to make entries in the admission and discharge book, the other to fill out the cards. These clerks remained at the table and two clerks brought the details of each case. Each clerk served two medical officers, and noted on a pad all identifying particulars from the pay book or disc; also the diagnosis from the report of the medical officer, the dose of anti-tetanic serum or morphine, and whether the case was serious and required the red envelope to the field medical card. These slips with all the necessary information were then delivered to the clerks, and when the card was made out the "runner" was responsible that it was fastened to the patient's jacket.

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The preparation of dressings took the time of one man, who was responsible for replenishing the supply for the enamelled basins. For this purpose a large table was placed at one end of the room, where gauze and wool were cut into convenient sizes and the wrapping stripped from bandages. In the first 21 hours this station passed 1,108 stretcher cases. The total number of wounded from August 26 to September 7 in the advance to the Canal du Nord was 664 officers and 13,686 other ranks. The casualty to medical personnel was one officer, Lieut.-Colonel H. H. Moshier, commanding No. 11 Field Ambulance, killed, and 7 wounded; 19 other ranks killed and 70 wounded.

Until Cambrai was taken, Quéant was the centre of medical operations, as it was served by a broad-gauge railway. The wounded in this action were passed direct through Quéant from the advanced stations to the casualty clearing station, where the records were made. The director of each division was responsible only for clearing his own front.

At the time of the Armistice, November 11, 1918, the Canadian Corps was disposed in depth between Douai and Mons, with two divisions in the line and two in reserve. The sick and wounded had all been evacuated. The medical headquarters of the corps was at Valenciennes; of the respective divisions at Masny, Frameries, Jemappes, and Valenciennes. The position of the ambulances varied from day to day. On November 14, the medical arrangements for the advance to the Rhine were completed at a conference in Roubaix. The 1st and 2nd Canadian Divisions had been chosen; the corresponding ambulances and sanitary sections accompanied, the surplus being transferred to the Fourth Army and remaining in the Mons-Brussels area.

During the march to the Rhine the evacuation of the sick alone was difficult. If there had been battle casualties

the task would have been impossible. The railways were useless; motor transport was inadequate for journeys to the rear amounting at times to eighty miles. Rations were reduced to the extreme of safety, and a fall of snow in the Ardennes would have imperilled the whole enterprise. Influenza became prevalent, and sections of field ambulances were dropped at various places to meet the need. As the clearing stations came up they took over the sick and allowed the sections to join their units.

The forward movement began November 20, and by December 11 the Canadian Corps headquarters were in Bonn. By the 16th, all units were at their positions in the area of occupation around the bridgehead. These mobile medical units which have been followed so diligently these four years had now come to the end of their devious way in a strange land at places whose very names were in a new tongue. Their positions can now be recorded for the last time: No. 1, Wahn; No. 2, Urbeck; No. 3, Cöln-Vingst; No. 4, Bonn; No. 5, Putzchen; No. 6, Siegburg; No. 14, Troisdorf. The sanitary sections were in Troisdorf and Cöln-Vingst; the dental laboratory in Bonn; No. 1 Casualty Clearing Station at Euskirchen, and No. 2 at Bonn.

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[1] *Germany in Defeat.* De Souza. Kegan Paul, 1916.

[2] Report of the Ministry O.M.F.C. 1918. Interim Report Cdn. Corps, p. 105 and map.

[3] *British Official History of the War. Med. Serv. Gen. Hist.* Vol. III, p. 297.

## CHAPTER XXVIII

### DEMOBILIZATION

When the war was over the troops were embarked in England, where they had completed mobilization four years earlier. Upon arrival in Canada all that remained for them was to proceed to their homes through their dispersal areas. For the sick and wounded hospitals had been prepared.

The time had now come for dealing finally with the wounds of war. The following table shows the number and nature of those wounds to August 31, 1919:—

WOUNDS IN ACTION

| | Officers | Other Ranks | Total |
|---|---|---|---|
| Head and neck | 907 | 21,377 | 22,284 |
| Chest | 230 | 3,550 | 3,780 |
| Abdomen | 78 | 1,317 | 1,395 |
| Pelvis | 10 | 43 | 53 |
| Upper extremities | 1,895 | 49,615 | 51,508 |
| Lower extremities | 1,809 | 41,843 | 43,652 |
| Wounded, remained at duty | 904 | 6,698 | 7,602 |
| Wounds, accidental | 107 | 2,140 | 2,247 |
| Wounds, self-inflicted | 6 | 723 | 729 |
| Effects of gas fumes | 368 | 10,988 | 11,356 |
| | 6,312 | 138,294 | 144,606 |

In further detail, the amputations required as a result of these wounds were: both legs 47, of which 5 in officers; both legs and both arms 1; one leg 1,675, of which 62 in

officers; one foot 232, of which 9 in officers; both feet 11, of which 1 in officers; both arms 6, of which 1 in officers; one arm 667, of which 27 in officers; one hand 141, of which 3 in officers.

A service for facial injuries had been opened in 1916 at Westcliffe Hospital, Folkestone, under the command of Colonel J. D. Courtenay. In May, 1917, it was transferred to No. 16 Canadian General Hospital at Orpington. In December, 1917, a centre was organized for facial injuries at Sidcup with Colonel J. B. Colvin, R.A.M.C., in command. This hospital was divided into sections,—two for British cases, one for Australians, one for New Zealanders, and a section for the Canadians.

In May, 1919, this service was transferred to Canada at Ste. Anne de Bellevue, under the command of Colonel K. Cameron. Later in December, 1919, the service was finally transferred to the Dominion Orthopaedic Hospital, Toronto, with Colonel C. S. McVicar in command, and then under the Department of Soldiers' Civil Re-establishment. The officers who developed this service so admirably were: Majors C. W. Waldron and E. F. Risdon, Captains T. W. Bleakley, W. I. Henderson, M. G. Thompson and W. L. Post, with Lieut.-Colonel G. G. Hume, Majors A. H. L. Campbell and O. N. Leslie, Captains F. H. Crawford, H. B. Findlay, B. Mendleson, and Sergeant W. B. Gordon of the dental corps. Over two thousand cases passed through this service overseas, and about five hundred since returning to Canada.

In every military district in Canada general hospitals had been established, and the larger ones were divided into two sections, one for active treatment by surgical measures, and one for treatment by other means. The most important of these hospitals were Ste. Anne de Bellevue in Montreal, Dominion Orthopaedic and St. Andrew's in

Toronto, Manitoba in Winnipeg, and Camp Hill in Halifax. The treatment, other than surgical, was under the general direction of Lieut.-Colonel R. Wilson as consultant.

All casualties from England were taken on the strength of the Clearing Services Command, and upon arrival officers and men were sent by that organization in specially equipped hospital trains to the military district in which they individually resided. There they were taken on the strength of the hospital section of the district depôt, and were admitted to one of the large district hospitals erected and maintained by the Department of Militia and Defence, where they were treated until finally disposed of.

Invalids requiring certain forms of special treatment were sent to special hospitals, irrespective of the locality of the invalid's residence; amputations to the Dominion Orthopaedic Hospital, Toronto; facial injuries and neurological conditions to St. Anne de Bellevue; those requiring prolonged treatment, as for tuberculosis and insanity, were immediately discharged from the army and transferred to the Military Hospitals Commission which was afterwards the Department of Soldiers' Civil Re-establishment.

The hospitals erected in every military district in Canada were admirably suited for their purpose; they were fully equipped with all the appliances for treatment and re-education, with departments for electro-therapeutics and hydro-therapeutics, gymnasiums and remedial workshops; and they were maintained with the enthusiastic assistance of the staffs in a state of the highest efficiency.

Invalids after their treatment had been completed in hospital were brought before a medical board, consisting of three medical officers, who after fully investigating the disabling conditions and the extent of the disability, gave their opinion as to the disposal of the invalid: whether he was fit for general service; service abroad but not general

service; or home service only. Such men were discharged to the district depôt whence they were sent back to their unit or after the Armistice to civil life. If the board found that the invalid was unfit for further service and if he required additional treatment, he was transferred from the district depôt to the Department of Soldiers' Civil Re-establishment. All invalids after discharge from hospital came before the Board of Pension Commissioners, and when their disabilities were investigated a decision was taken as to the amount of pension.

During the years 1919-20 when the invalids had all arrived in Canada and the number in hospital had rapidly diminished, the Department of Militia and Defence transferred all their hospitals to the Department of Soldiers' Civil Re-establishment, many of which continue to be maintained for such as are permanently incapacitated, or for any one who may have a recurrence of a war disability.

At the port of Liverpool a general hospital with a capacity of 1,180 beds was placed in the suburb of Kirkdale about two miles from the docks, the purpose being to clear patients for embarkation. A system of invaliding to Canada had been created long before it was time to demobilize. A unit was formed, known as No. 1 Canadian Discharge Depôt, and placed at Buxton, which was convenient to the port of Liverpool. During the year 1918 the system was tested by the dispatch of 21,662 troops, including men of low category whose further service was useless, as well as those who by reason of wounds or sickness were being returned to Canada. It was reckoned that a man unable to do 60 per cent of a full day's work would be better employed in civil life.

As each soldier embarked he carried with him fourteen papers of which two were in duplicate and two in triplicate. In addition, he carried on his person "sundry documents" ranging from one to twenty in number, making

a possible total of thirty-four. Of these four were purely medical, namely, the casualty form, medical history sheet, proceedings of medical board, and dental certificate. These various papers were fastened together with a piece of string or " tape," so that they might be kept in order and accessible when required. System and order, the first principle of military life, was rigidly enforced. There was some complaint on the part of the troops that they were not being returned to Canada in that splendid haste and confusion with which they went overseas. At Kinmel camp they became impatient and killed five of their number. This complaint of delay was invalid against the medical services, although every man, whether fit or in hospital, was made the subject of a medical board, his medical history fully set forth and the extent of his casualty estimated, —and this took time. Yet no individual or any transport was delayed through failure to complete the medical documents.

In the meantime the operation of hospitals was unceasing. On October 25, 1918, there were 33,795 Canadians in hospital in the United Kingdom, of whom 18,367 were in Canadian hospitals; the 15,428 remaining in British hospitals were reduced by transfer to 1,426 on March 28, 1919. The number of admissions to hospital in this period was 112,426, of which 65,559 were for wounds or sickness contracted on service out of England; the total number of days' treatment was 6,459,570. During the five months, 45,000 patients were discharged. The average daily number of treatments of all patients during the period was: by physical training, 16,678; by remedial training, 2,940; by massage, 1,996; by electricity, 865; and 200 by hydrotherapy. The service itself had to be administered. At the Armistice the strength of officers overseas was 1,528, and of nursing sisters 1,901. Of other ranks there were in France 3,893 and in England 7,573, a total of 11,466; by

March 31, the officers were reduced only to 1,246, and the nursing sisters to 1,467.

Arrangement for the assembly and movement to embarkation point of all invalids worked well as the result of the procedure adopted two years earlier. In addition to the arrangements for the troops their civilian dependents were provided for. Disinfection of men and their clothing for 2,000 daily was arranged. An inspection of technical medical equipment was undertaken, and surplus sold for approximately eighty-seven thousand dollars.

The most arduous labour was the medical boards, and 300 officers were employed upon that drudgery. All soldiers being demobilized had to be examined by a board of at least three officers. Those who showed any disability had to be boarded on " the long form," which compelled a reading of all the documents and complete medical history of the soldier during his time overseas, as well as specialists' examination and special medical tests. It was computed that 30,000 troops would be returned each month. This meant 1,000 medical boards daily. Staffs had to be prepared and instructed. It required at least half an hour to complete properly one of the new forms, and doing this day after day for several months demanded patience and perseverance. It was necessary to withdraw nearly all the medical officers from formations returning out of France and detain them for board work in England. After the Armistice more than 289,000 medical boards were written, bringing the total number in the last two years to 385,469, of which many had to be written a second time owing to a fresh order that no man was to be sent on transport with proceedings written more than 30 days previous to his sailing.

Having provided for medical boarding, the sanitation of camps and preventing infectious cases from embarking on hospital troopships demanded thought. There were 183

sailings with 253,000 soldiers and 50,000 of their dependents—women and children. All of those sailings, both ships and passengers, were rigidly inspected before being allowed to proceed. In addition, the troop trains carrying the passengers to the ports of embarkation had to be staffed with medical personnel—officers, nursing sisters, and orderlies. The whole of the medical service was kept completely employed until the troops and their dependents arrived at their dispersal stations in Canada. The policy adopted in respect of the medical formations was to return as complete units those which had been organized in Canada and had served overseas from England. Units organized in England were disbanded and returned in detail.

On the departure of the last hospital ship, *Araguaya,* September 11, 1919, the last of the hospitals was closed, and patients remaining to the number of 189 were transferred to English hospitals. By the first of the new year 1920 the treatment of all patients overseas with the exception of 27 came to an end.

The Canadian army held the field for four years without any of those failures in the medical service, by which so many campaigns have been marred. The cause of this continual success was various. The service had been created in time of peace by Bergin, Neilson, Fiset, and Jones; in time of war by Jones and Foster. The officers under their command were skilled professionally, trained in medical schools of old excellence, imbued with a sense of loyalty and discipline. Above all, the service had been incorporated into the British army; it was made partaker of all the traditions accompanying that privilege; it had the equipment and organization of that army to rely upon. Coming into such an inheritance, all that was required was intelligence, initiative, and industry. The Canadian medical service proved on the wide field of war that it possessed those virtues.

THE END

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# ABBREVIATIONS

A.D.G. .....Assistant Director-General.
A.D.G.M.S. .....Assistant Director-General Medical Services.
A.D.M.S. .....Assistant Director Medical Services.
A.D.S. .....Advanced Dressing Station.
C.A.M.C. .....Canadian Army Medical Corps.
C.C.S. .....Casualty Clearing Station.
C.P. .....Collecting Post.
D.A.D.M.S. .....Deputy Assistant Director of Medical Services.
D.D.G. .....Deputy Director-General.
D.D.M.S. .....Deputy Director of Medical Services.
D.G.A.M.S. ..... Director-General Army Medical Service.
D.G.M.S. .....Director-General of Medical Services.
D.M.S. .....Director of Medical Services.
D.R.S. ..... Divisional Rest Station.
G.H.Q. .....General Headquarters.
H.Q. .....Headquarters.
H.M.H.S. .....His Majesty's Hospital Ship.
M.O. .....Medical Officer.
M.D.S. .....Main Dressing Station.
O.M.F.C. .....Overseas Military Forces of Canada.
R.A.M.C. .....Royal Army Medical Corps.
R.S. .....Rest Station.

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